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GROUP HEALTH SURVEYS IN A DIAGNOSTIC CENTER

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THERE should be no conflict between the activities of individually practicing family physicians and those of highly organized medical centers with full-time staffs. Both have special spheres in which they can contribute most in the total picture of medical care. The medical center depends for the referral of patients upon physicians in private practice, to whose care they are returned after completion of diagnostic studies or special therapy. One area in which the medical center is particularly well adapted to carry out expeditiously a function that would be difficult in private practice is the performance of mass health surveys sponsored by industrial agencies. In a medical center the space and personnel are readily available for the examination of large groups in a short time. On the other hand, the medical center is not so well adapted for the carrying through of the long-term management of patients after defects have been found by mass screening; therefore, these patients are referred to their family physicians. The medical center thus supplements private medical practice by pointing out the need for definitive medical treatment to patients who think they are well and referring them to their family doctors. The medical center and the family physician form a team, each member of which has specific functions.

Screening clinics for specific diseases have been a part of public-health activities for many years. The cost of each positive finding has been high, however, and patients have often misinterpreted the function of the tests and derived false security from the examination. For these and other reasons the concept of multiple screening was devised. In December, 1949, the Massachusetts Department of Public Health, with the sponsorship of the Massachusetts Medical Society, set up a pilot multiphasic screening clinic at the New England Center Hospital, using the facilities of the Pratt Diagnostic Clinic.[1,2] In this clinic many of the various screening technics that had previously been shown to be of value in mass surveys for specific disorders were combined and evaluated. A total of 7677 persons were examined. A multitude of abnormal findings were recorded, and the results of all examinations were forwarded to physicians designated by the persons screened. No attempt was made to establish diagnoses or to recommend treatment.

It became apparent to some who had the opportunity of observing the activities of this clinic that although considerable valuable data were being accumulated and many patients with remediable medical disorders were being referred to their family physicians for care, certain dangers were inherent in this method. The most important of these was the sense of false security given to patients who believed that they were free of disease after being examined in the clinic and being told little when they left. The clinic made no claim that patients had been completely screened for malignant lesions; yet many persons screened had presented themselves specifically for that purpose, and often went away believing that all possibility of cancer had been ruled out. The second major objection was that there was a distinct break between the initial screening examination and the suggestion that follow-up studies by the family physician were necessary. About a third of the patients apparently did not present themselves to their family doctors for follow-up study despite repeated advice by mail and by social workers to do so. In many cases it seemed obvious that urgently necessary follow-up studies were not adequately carried out. (A patient with a questionable rectal mass found in the clinic, who was reassured by her family physician without the benefit of proctoscopy, died a year later of metastatic rectal cancer.)

In 1951 the Pratt Diagnostic Clinic was approached by the management of a large insurance company in Boston and was asked to do the screening examinations on a number of employees forty-five years of age and older. In the light of previous experience, it was agreed to set up a clinic similar to the earlier health clinic, with the proviso that definitive diagnostic procedures could be done in cases in which there were significant findings on the screening tests.

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The technics used in the State Health Protection Clinic were modified slightly. Each employee filled out a self-screening questionnaire containing 222 questions, modified from the Cornell Medical Index, before reporting to the clinic. At the clinic this was discussed with a trained clerk to ensure that the questions had been understood. Positive answers were underscored in red. Then blood was drawn for hemoglobin, sugar, serologic test and sedimentation rate, and urine was obtained for sugar and albumin determinations. A medical technician recorded height and weight, and another technician took an audiogram, using screening levels of sound in lower ranges. One lead of an electrocardiogram (Lead 1) was then taken; a vision test by a technician using the Bausch and Lomb Ortho-Rater was done.

The patient then undressed, and a chest x-ray examination was performed. Finally, the patient was seen by a physician, who spent about fifteen minutes with each person. The examination was limited to a brief discussion of the questions answered positively on the questionnaire, determination of blood pressure, examination of the optic fundi when indicated, inspection of the skin, palpation of the neck, axillas and groin for enlarged lymph nodes, palpation of the breasts for masses, auscultation of the heart, palpation of the abdomen for enlarged organs and masses, examinations for hernias and determination of the deep tendon reflexes; rectal examinations were done on all patients, the guaiac test for occult blood in the stool being performed on the finger specimen, and pelvic examinations were done on all women whenever possible. The entire screening examination took approximately an hour, as outlined in Table 1.

TABLE 1. *Time Schedule for Multiple Screening Examinations.*

PORTION OF SCREENING	DURATION OF PROCEDURE min.
Interview with reception clerk	2
Review of questionnaire	5
Blood and urine for laboratory study	10
Vision test	5
Hearing test	5
Single-lead electrocardiogram	5
Undress	5
X-ray examination of chest	5
Examination by physician	15
Dress	5
Total	62

The patient then dressed and was sent for a comprehensive dental examination, the findings of which are not part of this report.

Laboratory reports and interpretations of chest x-ray films and the single-lead electrocardiogram were entered on the physical-examination card. These and the self-screening history questionnaire were then carefully reviewed by an internist. This proved to be one of the most significant parts of the study. Whenever in his opinion the findings warranted further study or consultation these were ordered and appointments made with the patient to have them performed in the Pratt Diagnostic Clinic. Whenever hospitalization was required for diagnostic study — for example, for biopsies, uterine dilatation and curettage — the advice of the family doctor was sought. A co-ordinator at the insurance-company office proved a valuable adjunct in these arrangements.

The screening clinic operated for a few hours on each of four afternoons a week. Eighteen persons were scheduled at five-minute intervals each afternoon. The survey of this group took about two months. The personnel necessary for the smooth handling of the group was as follows: 1 nurse-secretary-supervisor; 1 reception clerk; 1 history taker; 2 laboratory technicians; 3 technicians for eye, ear and electrocardiographic examinations; 1 x-ray technician; 2 nurses; 3 examining physicians; 1 internist; 1 radiologist; and 1 cardiologist. All these worked for the clinic part time except the supervisor, who devoted full time. The clerks and minor technicians spent only about an hour and a half per session; the nurses, laboratory and x-ray technicians spent approximately three hours in attendance each session. The examining physicians were in attendance between one and a half and two hours per session; the radiologist reviewed the chest x-ray films, and the cardiologist reviewed the one-lead electrocardiograms as part of their regular duties. In addition, over-all supervision occupied considerable time of the clinic medical director and the hospital administrator. The special studies and consultations were done by appointment as part of the Diagnostic Clinic routine and were charged at regular clinic semi-private rates.

A total of 583 persons, 296 men and 287 women, were examined in this fashion. Records were kept of all abnormalities — important or trivial — uncovered in the survey. There were few persons who showed no abnormality. The total number of abnormalities found was 1605. These have been classified according to systems, whether or not they were previously known, and by their importance (Table 2). Those thought to require immediate treatment were classified as Group 1, and those definitely requiring treatment but of less urgency as Group 2; the remainder, including practically all the known defects, were classified as Group 3.

The results of all these examinations, including the special tests and consultations, were then sent to the family physicians named by the employees at their initial visits, and whenever further studies or treatment was indicated a notice was sent to the patient that he should report to his doctor. When visual defects were found the employee was advised to report to his eye doctor for examination. When only minor defects were uncovered the employee was so advised. Follow-up study by letters

and telephone calls to physicians was pursued with vigor in the cases in Group 1 series but was not so strenuously pursued in those in Group 2; follow-up examination in Group 3 consisted only of post-card reports from physicians.

In a review of the totals and particularly of those presumably discovered at this examination it was of considerable interest to analyze how the discovery was made — that is, whether by analysis of the questionnaire, by the routine tests or by the physical examination. Of the total of 1198 defects discovered, 586 were revealed by routine tests (Table 3); 142 defects were uncovered by analysis of the questionnaire, and 470 by the physical examination. Of course, some defects were noted by two or even all three methods. In this study an

TABLE 2. *Defects Found in 583 Employees Over Forty-Five Years of Age.*

CLASSIFICATION	NO. OF CASES	PREVIOUSLY KNOWN DEFECTS	DEFECTS DISCOVERED	GROUP 1 DEFECTS	GROUP 2 DEFECTS	GROUP 3 DEFECTS
Integumentary:						
Dermatitis	31	22	9		1	30
Tumors	19	6	13	6	1	12
Hemangioma, nevi and papilloma	20	11	9		1	19
Cysts	22	10	12			22
Locomotor:						
Static deformity	11	9	2			11
Postural defect	11	2	9			11
Osteoarthritis	16	2	14			16
Other joint disorder	8	7	3		1	7
Miscellaneous	2	1	1			2
Eye and ear:						
Visual	273		273			273
Hearing	159	?	159			159
Internal ear	4		4			4
External ear	1	1				1
Miscellaneous eye	3		?			3
Respiratory:						
Allergic rhinitis	14	10	4			14
Asthma	9	6	3			9
Emphysema	11	1	10			11
Bronchitis and bronchiectasis	9	6	3			9
Tuberculosis suspected	11		11		3	8
Pneumonitis	1		1		1	
Cardiovascular:						
Coronary-artery disease	22	7	15		14	8
Valvular heart disease	31	6	25	2	8	21
Hypertension	118	56	62		28	90
Generalized arteriosclerosis	6		6		3	3
Varicose veins	69	67	2		2	67
Vasospastic disorder	1		1			1
Endocrine and metabolic:						
Obesity	122	122				122
Diabetes	18	4	14	1	12	5
Hyperthyroidism and hypothyroidism	5		5	1	1	3
Goiter and thyroid nodule	11		11			11
Menopausal syndrome	13	9	4			13
Miscellaneous	6	1	5		1	5
Gastrointestinal:						
Duodenal ulcer	27	16	11		10	17
Gastritis and gastric ulcer	5	2	3		1	4
Functional	29	3	26			29
Tumors and polyps	6		6	4	2	
Cirrhosis and hepatomegaly	15	1	14	1	2	12
Cholecystitis and cholelithiasis	8	5	3		3	5
Miscellaneous	3		3			3
Internal or mixed hemorrhoids	35	2	33			35
External hemorrhoids	74		74			74
Gynecologic:						
Tumors of uterus, ovary and vagina	28		28	14	2	12
Polyps	8		8	3	1	4
Postmenopausal bleeding	6		6	1	3	2
Cervicitis, cervical erosion and vaginitis	32		32			32
Cystocele and rectocele	24		24			24
Uterine displacement	6		6		1	5
Genitourinary:						
Prostatic enlargement	35		35	2	3	30
Prostatitis	6		6			6
Tumor or cyst of kidney	2		2	1	1	
Hydronephrosis	3	1	2	2	1	
Hydrocele and varicocele	10		10			10
(Albuminuria)	43		43			43
Miscellaneous	6	3	3		1	5
Neuropsychiatric:						
Anxiety state	34		34			34
Depression	4		4		1	3
Neurologic disorder	7	6	1			7
Miscellaneous:						
Nondiabetic glycosuria	38		38			38
Elevated blood sedimentation rate	20		20			20
Anemia	10	2	8	1	9	
Lymph-node disorder	3		3	2		1
Parotid-gland disorder	1		1	1		
Hernias	20	2	18		2	18
Totals	1605	407	1198	42	120	1443

attempt was made to determine which of the examining methods was the most important. The visual and hearing defects constituted the great bulk of the abnormalities found by technical testing, and the abnormally high number of apparent hearing defects must indicate an imperfection of technic.

TABLE 3. *Abnormalities Discovered by Technical Testing.*

ABNORMALITY	No. OF CASES
Visual defect	273
Hearing defect	(?)159
Defect on chest x-ray examination:	
Emphysema	7
Tuberculosis suspected	11
Cardiac enlargement	12
Goiter	1
Defect on urinalysis:	
Albuminuria	43
Diabetes	14
Glycosuria (nondiabetic)	38
Defect on blood analysis:	
Elevated sedimentation rate	20
Anemia	8
Total	586

URGENT PROBLEMS (Group 1)

There were 42 conditions that were considered urgent and therefore were classified in Group 1 (Table 4). Analysis of this group indicated that most of the abnormalities were revealed by the physical examination alone or by combinations of analysis of the questionnaire and technical testing or physical examination and special testing; a few were discovered by study of the questionnaire or by testing alone. After the diagnosis had been established or when hospitalization became necessary to complete the diagnostic studies, the responsibility for action was transferred to the family physician. Repeated efforts were made to ensure that adequate investigation or treatment had been instituted. Follow-up study showed that these efforts were not universally successful. In 33 cases tumors or other abnormalities suggestive of cancer were present. In 3 other cases operation was recommended, and in 6 cases urgent medical conditions were found. In 15 of the 42 cases with urgent problems the recommended diagnostic or therapeutic measures were not carried out either because the patient refused to return to the clinic or to go to the family doctor or because the family physician did not believe they were indicated. This delay in instituting important diagnostic procedures or treatment was discouraging, but in part was compensated for by the fact that many important conditions were discovered and treated in this group of presumably healthy persons.

There were 4 conditions that were proved to be malignant (3 of the skin or mucous membranes, and 1 of the sigmoid). Three gastrointestinal polyps were discovered and removed. Nine hysterectomies were performed because of large pelvic tumors; a tumor of the parotid gland was removed, and a

TABLE 4. *Group 1 Conditions.**

ABNORMALITY FOUND	RESULT OF FOLLOW-UP STUDY
Ulcer of lip	Biopsy showed carcinoma
Ulcer on neck — ?carcinoma	Patient has not gone to doctor
Lesion on back	Biopsy showed carcinoma
Lesion on back	Biopsy showed carcinoma
?Basal-cell carcinoma of eyelid	Being watched
Nodule in breast	Being watched
Polyp of stomach	Removed (benign)
Polyp of descending colon	Removed (benign)
Polyp of colon	Removed (benign)
Tumor of sigmoid	Removed (malignant)
?Tumor of kidney	Operation revealed renal cyst
Prostatic hypertrophy, with obstruction	Symptomatic therapy
Benign prostatic hypertrophy; early carcinoma suspected.	No reply from doctor
Cervical polyp, with anemia	Dilatation and curettage not done
Large cervical polyp	Has not been removed
Cervicitis and anemia	Dilatation and curettage (chronic endometritis)
Postmenopausal bleeding	Dilatation and curettage (benign)
Myoma uteri, cervical polyp	Biopsy (negative); dilatation and curettage later.
?Pelvic tumor	Examination under anesthesia negative
?Pelvic tumor	Examination under anesthesia negative
?Ovarian tumor	Patient has not gone to doctor
Pelvic tumor	Hysterectomy
Large pelvic tumor	Hysterectomy
Large pelvic tumor	Hysterectomy
Myoma plus anemia	Patient has not gone to doctor
Myoma uteri	Hysterectomy
Myoma uteri with menorrhagia	Hysterectomy
Myoma uteri plus anemia	Hysterectomy
Large myoma	Hysterectomy
Large myoma	Hysterectomy
Fibroma of vagina	Hysterectomy
Large cervical gland	Patient refused biopsy
Tumor, right parotid gland	Tumor removed (benign)
Hydronephrosis with renal calculi	Nothing done
Hydronephrosis	Nothing done
Hiatus hernia and anemia	"Improved"; no treatment.
Rheumatic heart disease (? subacute bacterial endocarditis)	Patient died of "infarct to kidney"
? Active myocarditis	Follow-up studies not done
Cirrhosis of liver	Diagnosis questioned
Lymphocytosis, lymphadenopathy and splenomegaly	Studies negative; patient being followed.
Severe diabetes	Patient improved on insulin
Thyrotoxicosis	Patient improved on propylthiouracil

*All previously untreated.

cyst, suspected of being a tumor, was removed from a kidney. Major operations, recommended in 21 cases, were done in 15.

Hydronephrosis with obstruction at the ureteropelvic junction, in combination with pressure atrophy and stones, was noted once, as was hydronephrosis apparently due to obstruction of the ureter from an aberrant vessel. Surgical exploration was advised in both cases by a urologist, but in neither was the operation performed. In a patient with marked anemia a fairly large hiatus hernia was discovered and was considered a possible source of bleeding, but nothing has been done because the patient is "improved."

In 1 case the diagnosis of subacute bacterial endocarditis was suspected at the first visit. When asked to return for blood cultures, the patient was discovered to be under the care of her physician for a "virus infection." She did not return, and it was later learned that she had died of an "infarct to the kidney." The underlying diagnosis was never established, but the original impression was probably correct and early treatment might have effected a cure. In another case the diagnosis of cirrhosis of the liver was established by the finding of hepatomegaly in addition to an abnormal test for bromsulfalein retention, but on follow-up questioning it was determined that the family physician had questioned this diagnosis. In 1 case an active myocarditis (? rheumatic) was suspected because of the history of recurrent joint pain and the finding of a gallop rhythm, an elevated sedimentation rate and prolongation of the PR interval in the electrocardiogram; no follow-up studies were done by the family doctor. In still another case bilateral axillary lymphadenopathy, splenomegaly and an elevated sedimentation rate suggested the possibility of leukemia. Fortunately, however, complete studies, including lymph-node biopsy and bone-marrow puncture by the family physician, ruled out this diagnosis. A case of thyrotoxicosis and a case of severe diabetes (blood sugar of 423 mg. per 100 cc.) were discovered, and both patients did well under specific treatment.

TABLE 5. *Group 2 Conditions.**

ABNORMALITY FOUND	NO. OF CASES
Hypertension (blood pressure of 190/105)	28
Angina pectoris	14
Diabetes	12
Duodenal ulcer	10
Anemia	9
Valvular heart disease	8
Cholelithiasis	3
General arteriosclerosis	3
Postmenopausal bleeding (vaginitis)	3
Prostatic hypertrophy	3
Skin tumors	3
Tuberculosis suspected	3
Hepatomegaly	2
Hernias	2
Polyp of rectum (removed)	2
Severe varicose veins	2
Small myoma uteri	2
Cervical polyp	1
Cyst of kidney	1
Depression	1
Gout	1
Hypothyroidism	1
Marked gastritis	1
Mild hydronephrosis	1
Pneumonitis	1
Renal calculus	1
Rheumatoid arthritis	1
Symptomatic uterine displacement	1
Total	120

*All previously untreated.

LESS SERIOUS CONDITIONS (GROUP 2)

The less urgent but still important previously unrecognized conditions discovered by the screening examinations are listed in Table 5. In this group were many conditions that needed prompt medical treatment or operations at a time of election. In others observation from time to time was indicated. It is of interest that 2 deaths subsequently occurred in this group — 1 from myocardial infarction in a woman who was found to have moderately severe hypertension, and the other from suicide by the patient noted to have a depression in which suicide is a well known risk.

In the original series seen in the Health Clinic under the sponsorship of the Department of Public Health costs were estimated at about $16 per patient.[2] In later series this was reduced to below $12, chiefly by means of a decrease in the time the person to be screened spent with a physician. (In recent multiphasic screening clinics operated by the Department, examination by a physician has been eliminated completely.) The estimated cost of the basic mass screening studies in the group reported here was $15 per person. The expense of the extra studies performed (Table 6) increased the cost by an average of about $8 per person, bringing the total to $23 per person (total cost of these studies, $13,409). When one considers the large number of pathologic conditions uncovered, the cost seems relatively low.

TABLE 6. *Summary of Special Studies Done.*

PROCEDURE	NO. OF CASES
Gastrointestinal series	56
Barium-enema examination	35
Gall-bladder x-ray examination	28
Intravenous pyelogram	16
Other x-ray studies	11
Proctoscopy	26
Cystoscopy	5
Determination of basal metabolic rate	16
Electrocardiogram	70
Glucose tolerance test	49
Blood chemical studies	54
Routine laboratory studies	66
Bacteriologic studies	17
Gynecologic consultation	64
Urologic consultation	12
Dermatologic consultation	10
Surgical consultation	15
Other consultation	11

CONCLUSIONS

In a group of 583 supposedly healthy employees over the age of forty-five, multiple screening ex-

aminations carried out in the manner outlined brought to light the following facts:

Cancer was present in 1 out of 146 cases, and significant tumors in which cancer had to be excluded were found in 1 out of 18 cases.

Significant heart disease — not previously recognized — was present in 1 in 25 persons; when known heart disease was included, nearly 1 in 10 had some form of heart disease.

Moderately severe hypertension (blood pressure of 190 systolic, 105 diastolic, or over) was present in 1 case in 20 (1 in 5 persons in the entire group showed a blood pressure of 150 systolic, 90 diastolic, or greater).

Previously undiagnosed duodenal ulcers were found in 1 in 58 employees (duodenal ulcers totaled 1 in 20, including known cases).

Cases of previously undiagnosed diabetes numbered 1 in 48 — there was 1 case in 32 among known cases.

One employee in 5 was overweight.

One in 15 showed an easily recognizable psychiatric condition.

Nearly half the group had less than perfect vision with glasses.

The tests performed by technicians were an adjunct to mass screening, but the analysis of the questionnaire by an internist and careful physical examination and indicated diagnostic studies were essential, especially in discovery of disorders requiring immediate medical attention.

An appreciable number of patients apparently did not receive maximum benefits from this study because of indifference or lack of good communication between the clinic and family physicians. Continued education of patients and doctors in the function of mass screening clinics is essential.

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PERIODIC EXAMINATION OF SUPPOSEDLY WELL PERSONS*

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A REALLY sick person in this country is assured of probably the best medical attention in the world. But the so-called "well" person seeking to avoid future illness, or to discover early evidence of trouble already present, usually receives but superficial attention from the busy physician. It is upon these two aspects of medicine — prevention of disease and early diagnosis — that the state and federal governments are now encroaching, and will continue to encroach (in spite of outcries from the American Medical Association and in spite of national propaganda drives and legislative lobbying) unless the medical profession can offer the people the preventive medical services that they have been taught to demand.

Thirty years ago, when I started at the Massachusetts General Hospital, I was assured that the outpatient department was the most interesting place for me to work, because there, I was told, I would see the beginnings of disease. I rarely saw in the outpatient the beginnings of disease, nor apparently did the older men, for they almost never appeared in that part of the hospital. The reasons that I saw little disease at its inception were, first, that patients did not come till they were sick (and that was usually late in their illness), secondly, that I did not know how to recognize early disease if it ever appeared and, thirdly, that I was not really interested. What I wanted then were sick people who would get well and be grateful, or cases of advanced disease with good abnormal physical signs for differential diagnosis and teaching purposes. Many physicians still feel the same way about patients with little or nothing apparently the matter with them.

However, it is my belief that if eventual Government control of the medical care of the American people is to be avoided greater emphasis must be placed on the early diagnosis of disease and on its prevention. This means that physicians must examine more apparently well people, discover the evidence of disease early, if it is present, and, when possible, act to prevent future illness. Unless doctors take upon themselves this responsibility, it is abundantly evident that the state and federal governments will do so.

The procedure in a medical survey of well people should therefore be discussed. Such a survey cannot be standardized. I can only give the rough plan that I have evolved for myself, and some indication of the results obtained.

A physician cannot do everything to everybody unless he belongs to a group, and then it usually costs the patient too much. What he can do first of all is to take a significant history — one that will indicate areas where specific examinations are needed. Examples are questions about hoarseness, or the slight morning cough noted chiefly not by the patient but by the family. With this lead I have

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been fortunate in uncovering 3 cases of early pulmonary tuberculosis in people who thought they were well. Other questions concern tightness in the chest, or pain in the neck or teeth, either related to exertion, difficulty in swallowing, change in enjoyment of food, hemorrhoids (a question that leads naturally to the matter of rectal bleeding), dark or red blood, post-coital bleeding or blood or discharge subsequent to the menopause.

I ask routinely if there has been any family history of pernicious anemia, diabetes, allergy or thyroid trouble. Does the patient feel better in hot or cold weather? (The answer often gives more information than a determination of basal metabolic rate.) Has there been sore tongue or paresthesias of hands or feet, any double vision in the past (multiple sclerosis) or changes in weight? What does the patient eat for breakfast, for lunch and dinner? (I write these down as he talks.) Is sleep poor? Are there any worries, sexual incompatibility or coitus interruptus? Does the patient have headaches? Does he know his usual blood pressure? Has the patient himself any history of allergy?

One should always find out what medicines patients are taking, and invariably direct questioning is necessary for this. One woman, believed to have cerebral softening, was taking a small daily dose of nervine, containing bromides. Complete recovery resulted instead of institutional care. I remember a case in which the late Dr. George R. Minot was puzzling over a man's statement that he took "soda bicarb." Since the patient had no gastric symptoms Dr. Minot was wise enough to pursue the matter. It was then disclosed that he had not said "soda bicarb" but "Sedormid," and the cause of his thrombocytopenia was thus uncovered. Patients may be taking thyroid, salicylates, barbiturates or iodides, dispensed by other physicians, and disclosed only on direct questioning. Bromoseltzer may be the cause of cyanosis, and nose drops of continued vasomotor rhinitis. Some of these drugs may not only mask important symptoms but also produce skin troubles and blood disease.

In addition to the usual careful physical checkup certain special examinations are demanded by every intelligent patient. If these are not made the patient will go elsewhere, and eventually to Government-controlled clinics. Among these are pelvic and rectal examinations. I cannot estimate how many women have come to me (mostly sent by previous women patients) because I gave a "complete physical examination" — by which they meant a pelvic. I fear that many doctors are remiss so far as this internal examination, with visualization of the cervix, is concerned. A beloved clinical teacher once told me that he never did pelvic examinations because he never knew what he felt. But a well woman is not going to pay a fee for a partial examination, and then pay a gynecologic fee for a presumably negative pelvic examination. In my experience only in the rarest cases have objections been raised against the performance of an internal examination. I believe that many women dislike the procedure because they do not know what is going on in the examiner's mind. I always tell the patient what I am doing as the examination proceeds: "that feels like a normal cervix — there is the uterus between my hands — left ovary not enlarged, right ovary normal — now I will look at the cervix; the speculum will feel cold — now a rectal examination and you are through!" This sort of patter takes the curse off a procedure that, when done in silence, may be understandably upsetting. (The older man well knows, and the younger physician should remember, that a secretary or nurse must invariably be within hearing when a pelvic examination is made.) If I am in any doubt about the presence of a mass, or the innocence of a visualized cervix, I tell the patient so and send her to a gynecologist; under these circumstances the patient goes willingly to the specialist.

It is said that a proctoscopic examination should be part of every routine physical.* I have rarely done this examination in my office. Perhaps I

TABLE 1. *Positive Vaginal Smears in 800 Consecutive New Female Patients.**

Age	Complaint	Result of Pelvic Examination	Biopsy Report	Final Pathological Report
yr.				
65	Depression†	Negative	Endometrial cancer	Endometrial cancer
49	Arthritis‡	Negative	Negative	Cancer in situ of cervix
62	Fatigue	Negative	Cancer in situ of cervix	Cancer in situ of cervix
43	Arthritis	Erosion	Cancer in situ of cervix	Cancer in situ of cervix
50	Cancer phobia	Polyp	Cancer in situ of cervix	Cancer in situ of cervix
37	Hay fever	Negative	Cancer in situ of cervix	Cancer in situ of cervix
47	Arthritis	Negative (retained cervix)	Squamous-cell cancer of cervix	Squamous-cell cancer of cervix
53	Headache	Negative	Cancer in situ of cervix	Cancer in situ of cervix
65	Abdominal pain	Polyp	Negative	Negative
46	Chest pressure	Negative (retained cervix)	Negative	Cancer in situ of cervix
43	Cystitis	Cancer of cervix (retained cervix)	Invasive cancer of cervix (Stage I)	—
74	None	Negative	Under observation	—
57	Cough	Negative	Under observation	—

*All other patients were without pelvic symptoms.
†Three-week leukorrhea.
‡One-day spotting after administration of estrogen.

*Lombard, H. L., Franseen, C. C., Snegireff, L. S., and Potter, E. A. Report of Cancer Detection Center demonstration in Massachusetts. *New Eng. J. Med.* 245:793-797, 1951.

should. If the history is in the least suggestive (change in bowel habits or particularly rectal bleeding) I send the patient to a surgeon for this examination. If there is a bit of stool on my glove after the rectal examination, as there usually is, I rub it on a glass slide and do a guaiac test. Such a specimen has the advantage of coming from high in the rectum, above the usual source of hemorrhoidal bleeding. A negative guaiac reaction does not, however, eliminate the possibility of gastrointestinal neoplasm.

I have taken a routine vaginal smear in my last 800 new cases in women. I have done this for two reasons: because of my continued interest in this test as a means of discovering early cancer of the cervix, and because I have the good fortune to be connected with the Vincent Memorial Laboratory, where, under the supervision of Ruth Graham, smears are accurately interpreted. If the vaginal smear proves to be as valuable as it is now considered to be, facilities for this test must be provided to the doctors of this commonwealth for their general use. Such facilities will only be provided, I believe, when sufficient demand is expressed by physicians. Pressure for such laboratory services could be exerted through the state or county medical society.

The results of the use of this test in my office are presented in Table 1. Over a seven-year period, from 800 women examined by vaginal smears, 13 positive smears were obtained. One represented a false-positive reaction. Ten patients had proved cancer — 1 of the endometrium, and 9 of the cervix. Of these 1 was a Stage 1 cervical cancer (diagnosed on physical examination) and 8 were intraepithelial cervical cancers all unsuspected. Two further patients with positive smears are still being followed. One of the women with early cervical cancer had had a vaginal discharge for three weeks, and 1 had bled slightly after estrogen given for arthritis. The remaining 6 had had no pelvic symptoms. Thus, 1 out of about every 100 women coming in for routine physical examinations had cancer of the cervix, all but 1 discovered in the noninvasive stage of the disease.*

To return to more tangible matters: the breasts must be examined with the patient supine, and each quadrant must be palpated with thoughtful care and not casually. I teach every woman to examine her own breasts, remarking that "somebody is going to have breast cancer in the next five years." Any solitary tumor of the breast, no matter how small, must be explored. It is not possible for any one to distinguish some early cancers from single cysts. Very small multiple cysts in one or usually both breasts are innocent.

For this group of symptomless patients, the procedures described (together with any x-ray studies indicated), represent all that I believe is practical to eliminate the acutal presence of cancer. Possibly, a routine proctoscopic examination should be included. Cancer prevention, since the cause is not known, seems to be a contradiction in terms. Certainly, suspicious cervixes or skin lesions should be biopsied, and torn cervixes repaired; both excessive cigarette smoking and excessive sun-bathing should be discouraged and pipes tabooed in leukoplakia of the mouth. Polyps of the large intestine and pigmented moles should be removed. I am not aware that any other preventive measures can be taken against this disease. Periodic gastric analysis and cytologic examination of the gastric secretion in cases of pernicious anemia may be found to be justified in older patients.

Few physicians doubt that there is a relation between emotional states and physiologic changes; all know that the body functions less well in the presence of anxiety. Manifestly, an important duty is to lessen anxiety if present and particularly not to increase it. I rarely tell a patient his exact blood-pressure reading unless it is normal. If hypertension is present one can emphasize the fact that many patients' blood pressures go up in the physician's office and that hypertension per se, especially in women, is rarely a grave threat to health. Here the physician can give good counsel regarding control of physical and mental effort, the avoidance of too much golf and of bathing in cold water, and the value of one day off a week, or one hour off after lunch daily. I never put my hypertensive patients on a low-sodium diet unless congestive heart failure is present, and I am yet to be convinced of the safety or clinical value of any of the modern blood-pressure-lowering drugs. Many cases not only of hypertension but also of insomnia, colitis, asthma, arthritis, peptic ulcer, amenorrhea and even occasionally sterility are bound up with states of emotional tension. A frank talk at a second visit will often bring out some intolerable situation either at home or in the business office. For some a radical change in circumstance may be required, or if no change is advisable, a different attitude toward the situation and toward life may be encouraged. I doubt whether physician or psychiatrist can do much more than help a patient to acquire greater and more mature insight into the nature of his difficulties. But even a little more insight sometimes pays large dividends. What is needed is more often patient, uncritical listening on the part of the physician, rather than counsel. An hour so spent sometimes constitutes a high order of preventive medicine.

I have already summarized the results of screening by vaginal smear. Table 2 lists the abnormal findings, Table 3 the special examinations employed, and Table 4 the operative procedures done on a sample of 100 consecutive "well" patients with a follow-up period averaging five and a half years.

*Whereas all intraepithelial cancers do not proceed to the "clinical" stage, the great majority apparently do.

Routine blood Hinton tests were done on the majority — no positive results were obtained.

Specimens for sugar determination were taken in 65 cases; in 2 the laboratory (Massachusetts General Hospital) reported high readings, but later readings were normal. No unsuspected case of diabetes was discovered in this group. Twenty-four x-ray films of the chest disclosed 1 case of bronchiectasis. One duodenal ulcer and 2 cases of cholelithiasis were found on x-ray examination. The basal metabolic rate was significantly low in 2 out of 5 patients examined; proctoscopic examination was negative in 5, and the electrocardiogram was normal in the 4 cases in which this test was employed.

Hysterectomy was done in 8 cases — in 3 for fibroids, in 3 for cancer of the cervix, and in 1 each for carcinoma of the ovary and for adenofibroma of the ovary. In 2 cases basal-cell carcinoma of the skin was excised. One case was not diagnosed by me. One tonsillectomy was done for really infected tonsils. Two torn cervixes were repaired.

TABLE 2. *Abnormal Findings on Initial Examination of 100 Consecutive "Well" Patients.**

FINDING	NO. OF CASES
Obesity	13
Hypertension (blood pressure over 140/90)	4
Lacerated or suspicious cervix	9
Fibroid uterus	5
Enlarged ovary	2
Sinusitis	3
Basal-cell carcinoma	1
Prostatic hypertrophy	1
Myxedema	1
Diseased tonsils	1
Bell's palsy	1
Epilepsy	1
Total	42

*There was no evidence of abnormality in 58 of the 100 cases.

It is difficult to estimate the effectiveness of this type of work. However, the discovery and apparently successful treatment, in 100 patients, of 5 cases of cancer, 1 of frank myxedema, and 17 of obesity and hypertension seem to justify the effort involved.

The doctor is apt to say that he has no time for this type of health survey. I believe that he must make time if he does not wish to have this essential function taken away from him. Patients will pay for such service if they are given their money's worth. Perhaps one or two afternoons a week could be reserved for this type of work. Routine house visits might be turned over in some cases to younger men, without loss of income and with increased cordial relations between physicians already established and their younger associates. One should remember that it is a proper function of the Government to provide legitimate services that the citizen is independently unable to obtain. In my opinion, unless the public is to turn to the Government, preventive medicine must be undertaken by the practicing physician.

TABLE 3. *Special Examinations on 100 Consecutive "Well" Patients Followed for Three to Seven Years.*

PROCEDURE	NO. OF CASES	RESULT
Blood Hinton test	92	All negative
Blood sugar determination	65	63 normal; 2 high.
Vaginal smear	78	1 endometrial and 2 cervical cancers
X-ray examination:		
Chest	24	1 bronchiectasis
Upper gastrointestinal tract	10	1 duodenal ulcer
Gall bladder	7	2 cholelithiasis
Barium enema	8	2 diverticulitis
Skull	3	Negative
Intravenous pyelogram	2	Negative
Encephalogram	2	1 abnormal
Proctoscopic examination	5	All negative
Basal metabolic rate	5	2 low (below — 22 per cent)
Electrocardiogram	4	Negative

TABLE 4. *Operations among 100 Consecutive "Well" Patients Followed for Three to Seven Years.*

OPERATION	NO. OF CASES	FINDING
Hysterectomy	8	3 cervical cancer; 3 fibroids; 1 cancer of ovary; 1 adenofibroma of ovary.
Biopsy of cervix	5	2 positive for intraepithelial cancer
Repair of cervix	2	—
Cholecystectomy	3	Gallstones
Excision	2	Basal-cell carcinoma of skin
Tonsillectomy	1	

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THE HANDLING OF EMOTIONAL PROBLEMS BY THE FAMILY PHYSICIAN

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MINNEAPOLIS

TRADITIONALLY in medicine, the family physician has functioned not only as a doctor but as an adviser, friend and counselor. It has become a truism that the family physician was the predecessor of the psychiatrist, and from his point of view psychosomatic medicine is not new. Physicians in general practice[1] have reported that a third or more of the patients who come to their offices have no signs of organic illness; another third have symptoms out of proportion to the organic findings; and even in the remaining third, emotional problems are more often than not brought about by the organic illness. In fact, practically any medical treatment has emotional implications, even though the degree varies in different cases.

Consequently, the physician should be aware of and discuss emotional factors at the first contact with the patient — at the time of the initial history taking — rather than delay any consideration of them until organic factors are ruled out or found to be insufficient to account for the symptoms. When emotional possibilities are brought in at the last moment, the patient too often interprets their discussion as evidence of rejection on the part of the physician. He may indicate his resentment of this rejection by questioning the thoroughness of the work-up and starting a search for someone, physician or charlatan, who will provide an organic explanation, or he may attempt to re-establish his dependency by focusing on relatively minor physiologic variations.

Sometimes the conviction of an organic basis for a neurotic illness may be firmly established by the physician's emphasis on organic minutiae, such as a small variation from the normal in blood count. This emphasis is often the result of medical training, which makes him much more comfortable in the realm of the organic and which leaves him, perhaps, somewhat afraid of "psychotherapy." Furthermore, the physician's background naturally leads him to search for some definite, clear-cut cause for each illness as soon as possible, and he recognizes that the relatively intangible psychologic concepts are less easily proved. When he leaves his period of training and begins his practice, he discovers that he must work out his own ways of handling emotional problems, since he soon finds that these must be dealt with to give the patient adequate relief from discomfort.

The actual treatment of emotional aspects of illness is often represented to him in his training period as a formidable procedure requiring long experience and a great amount of time, and with somewhat mystical characteristics — a process distinct and separate from the usual patient–physician relation. It is seldom well defined because it is difficult to define and because it varies so greatly with individual practitioners as well as with individual patients. Often, he is told specifically what not to do but only in vague generalities what to do. In the following paragraphs an attempt is made to indicate the aspects of this general subject that are applicable to the day-to-day routine of the general practitioner. Hollis[2] has used four terms — "environmental modification," "psychological support," "clarification" and "insight development" — to describe technics of handling emotional components of illness. Although these procedures are described as if they are separable, in most cases a combination, particularly of the first three approaches, is used. It should go without saying that accurate diagnosis of the extent and nature of the emotional component in an illness is just as vital to the success of a treatment plan as accurate diagnosis of the organic factors. This paper presupposes a familiarity with diagnostic technics.[3]

ENVIRONMENTAL MODIFICATION

Environmental modification refers specifically to the steps taken by the doctor to change the environment in the patient's favor. This is a potentially valuable but often misused form of treatment. Since a physician frequently has to modify drastically the environment of sick people through hospitalization, quarantine and other often dramatic measures, it is only natural that he may be tempted to carry this authoritative role into situations in which there is no emergency, particularly if he becomes impatient at the slow progress the patient or family is making. He is accustomed to prescribe in a fairly arbitrary manner, so that there is danger in environmental modification that he will take the initiative from the patient rather than help the patient take it himself. Since eventual maturity and greater independence, as exemplified by the ability to make one's own decisions, are the goals of treatment in most cases, the making of such decisions by the physician may retard rather than hasten the patient's improvement.

How can the environment be modified by the physician and still prevent the patient from becoming more dependent and more likely to lean on the physician for ever-increasing control of his total life situation? This is perhaps best illustrated by case histories, of which 4 have been selected:

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CASE 1. Mr. A. has just been told that he will require sanatorium care for tuberculosis. He is uncertain whether to accept the recommendation because of his fear of poverty and future lack of educational opportunities for his children. When he is helped to realize, either by the doctor's knowledge of community resources or through referral to the county welfare board, that he is entitled to state financial aid for dependent children, and when this is presented in a way that permits him to retain his pride, he is relieved of his anxiety and consents to enter the sanatorium.

CASE 2. Mrs. B., suffering from hyperthyroidism, is told that she should have an operation. She is greatly concerned about the welfare of her children during her hospitalization since she has no close relatives. The doctor refers her to a family agency for help in providing a temporary homemaker (an experienced housekeeper who is skilled in handling children), and visiting hours are modified for the patient so that she has the reassurance of seeing her family daily during her hospital stay. This feeling of security helps her to accept the surgical procedure more comfortably, and consequently the operative result is more likely to be successful.

CASE 3. Mr. C. comes to the office as an emergency for treatment of lacerations of his arm, which he has pushed through a plate glass window while walking in his sleep. The doctor finds that he walks in his sleep frequently and upon taking further history discovers that he lives with his aunt and his grandfather, who has lately become somewhat senile and extremely arbitrary. The patient, now attending college, is grateful to his aunt for bringing him up after his mother's death — so much so that he feels obligated to spend most of his time with her. The aunt, in turn, feels obligated to care for the grandfather; and, although both the younger members recognize that the grandfather needs some sort of institutional care, they have been unable to find any. Through his knowledge of community resources, the physician directs the family to a home for the aged that proves satisfactory. After this takes place, the aunt is better able to find interests of her own outside the family; the boy is left free to follow student activities, and his somnambulism decreases.

CASE 4. After careful evaluation it becomes evident that Mrs. D's numerous hypochondriacal complaints are closely related in time to her husband's drinking bouts. The doctor arranges for a conference with the husband and, by careful avoidance of criticism or blame, wins enough of the husband's confidence so that he can recognize that he too has a problem. By not hurrying him, and by supporting his initiative, the doctor is able to facilitate contact with Alcoholics Anonymous.

Much of the physician's skill in modifying the environment rests on his knowledge of the community resources through which such changes can be made and of the possibilities within the community for such a change. For instance, before recommending an old people's home, the doctor must know that a satisfactory establishment of this kind is available to the family and should be acquainted with the local agencies that can help the family deal with the problems surrounding such a move. Before recommending or facilitating any modification, the doctor should have a clear understanding of the patient and others involved so that he will not defeat his own purpose and build up antagonism by suggesting inappropriate changes, or changes that the patient or relatives fundamentally do not want. Thus, the tuberculous patient may be too proud to accept anything that is related to charity; the hyperthyroid woman may not be able to trust anyone but herself to take care of her children; and the somnambulist may be unable to face the thought of sending his grandfather away. In such situations, modification of the environment may have to be abandoned or delayed until other technics prepare the way. In other cases, failure adequately to diagnose the nature of the patient's disturbance may lead to inept environmental maneuvering. For example, doctors often arbitrarily prescribe vacation trips for neurotic patients, hoping that their getting away from home will lessen the environmental pressures or better equip the patients to handle them. This prescription may produce a temporary respite in some patients, but in others unfamiliar surroundings and more time to brood may increase rather than decrease anxiety and depression. Too often marriage or parenthood is prescribed; besides the increase in complications of the original problem usually resulting from such steps, the authoritative decision made by the doctor renders the patient more immature and dependent rather than less so. He will be inclined to look to the doctor for the answer to the next problem that comes up, and the next after that and so on. Whenever the patient can make the changes himself, it is better for him to do so with the doctor assisting him, by psychologic support and clarification, to make his own plans and carry them out.

PSYCHOLOGIC SUPPORT

Psychologic support means the support by the physician of the existing and potential strengths and defenses of the patient as he struggles to handle his disturbed feelings. It is implied in all helpful doctor-patient relations and is the most frequently used form of treatment. Its objective is to help relieve feelings of anxiety and guilt, and to promote the patient's confidence in his ability to handle the situation adequately. To give effective psychologic support, the physician must really be interested in the patient and wish to understand his feelings. He usually begins by encouraging the patient to talk freely and express his feelings about his problems especially as they relate to his illness. He indicates his respect for and approval of steps the patient has taken or is planning to take when these attitudes are realistically warranted, and expresses confidence in the patient's ability to solve his difficulty and to make his own decisions. The type of relation between doctor and patient in psychologic support is somewhat paternal. The doctor is primarily permissive and giving, and the patient customarily responds with warm, positive feelings.

The physician avoids moralistic condemnation and a judgmental attitude, although this does not mean that he should appear to condone, for example, aggressive, anti-social behavior. In such cases he may indicate by his manner that his disapproval of the act is compatible with acceptance of the person of whose act he disapproves. The free expression of hostility must frequently be controlled by the doctor and permitted release in easy stages lest the patient be so frightened by his angry feelings

that he is overwhelmed. Psychologic support only includes reassurance when it is justified; false reassurance, in situations where it will prove false to the patient, usually results in loss of confidence in the physician and in the long run increases rather than diminishes anxiety.

The physician may also give psychologic support by encouraging attitudes or activity that will help the patient to function more realistically as well as more comfortably. An overly submissive patient may be encouraged to assert his own desires, or a patient with an extremely strict conscience may be helped to accept his right to at least a little pleasure, provided the doctor does not expect too much of a change or frighten the patient by stirring up too many hidden needs at once. Psychologic support may even include giving advice when the problem is one for which the patient does not have the background to make his own decision. The physician should remember, however, that his superiority in background for making decisions is ordinarily confined to medical matters. Medication may play a part in psychologic support, although it is too frequently overused, or used to the exclusion of other measures.[4]

The four patients discussed above under "Environmental Modification" may also be helped by psychologic support:

CASE 1. Mr. A., who has just learned that he has tuberculosis and should be hospitalized, may need psychologic support as well as medical help. He may be strongly tempted to reject the diagnosis or the recommended care. He may need to pour out his bitterness at this interruption in his plans for his family and himself. He may need an outlet for his fears for his family, his dread of the disease and his distrust of medical treatment. The doctor must understand that a realistic factual approach alone will not meet his need and should encourage him to express his anger and fear, allow him to feel the doctor's warm interest in his welfare, and gain his confidence so that he can put faith in the doctor's medical recommendations. As he finds that his objections are met with understanding, he may begin to look at his illness more realistically, and his physician may then support his more constructive plans.

CASE 2. Mrs. B. may resemble many patients with thyrotoxicosis who are extremely threatened by any situation in which they are helpless or dependent on someone else. Perhaps in her early life Mrs. B felt unwanted and now can only feel secure if she justifies herself by continually giving to others. The surgical procedure forces her into a dependent situation with a great deal of consequent anxiety, and she may require an opportunity to express her feelings about the operation or her fears about the care of her children in her absence. The doctor may need to listen in an understanding manner to fears or concerns that he and perhaps the patient too really know are not based on a realistic evaluation of the situation. In a supportive role, he would not make the patient too much aware of her hidden insecurities, but he may, through his attitude, interest and listening, give her the feeling of security and acceptance that may relieve her anxiety sufficiently to protect her from crises in the postoperative period.

CASE 3. The physician may give Mr. C. support by listening in an uncritical and accepting way to his conscious irritation and antagonism toward his grandfather. Expressions of confidence that there can be a way out that will be satisfactory for all, encouragement in the patient's attempts to help his aunt see the necessity of a change, support in his initial attempts to find an old people's home, recognition of his desire to have a normal student life — all would be a part of supportive treatment. This would not be done in a peremptory or an authoritative manner even though it might irritate the doctor to see the patient keeping himself from satisfaction through what might seem a misplaced sense of loyalty.

CASE 4. If the doctor conscientiously attempts to give psychologic support to Mrs. D. by sitting down with her whenever she has an exacerbation of symptoms, listening uncritically to her problems and encouraging her constructive efforts, he may be disconcerted to find that although she has become quite fond of him, her symptoms are becoming more frequent, and midnight house calls are getting to be a nuisance. He should then decide to schedule interviews with Mrs. D. for a definite half-hour once a week without regard to the presence or absence of symptoms. He should handle intervening "attacks" firmly and in a businesslike manner, postponing discussion to the regular appointment. This at first may irritate Mrs. D., but the doctor should be able to stand his ground without getting angry in return. As she responds to psychologic support, the attacks diminish, and he can gradually increase the intervals between appointments.

It is always important, especially with patients such as Mrs. D., to determine to what extent a patient inwardly hopes that the doctor who gives emotional support will take care of other needs. This can sometimes be foreseen early but may only become clear later when the doctor finds that his patient is bringing more and more of his problems to him, rather than becoming more and more self-reliant. To keep the dependency within limits, the doctor should keep the patient's focus on the presenting problem, should control the timing of appointments and should watch for and deal with indications that the patient is beginning to "cling" to the doctor. Self-awareness on the doctor's part is of great importance if the relation is to be guided by the patient's needs rather than the doctor's enjoyment or, perhaps, resentment of the patient's dependence.

In psychologic support, discussion material comes from the conscious level of the mind, although its unconscious implications may be apparent to the doctor. For instance, even though he may suspect the depth of Mrs. B.'s early insecurity, in supportive treatment he respects her defenses against becoming aware of it and keeps the discussion on material of which she is aware. Thus, it can be seen that support does not remove the causes of emotional disturbance, but, by relieving tension and increasing self-confidence, it reinforces the patient's ability to handle his conflicts. This is particularly applicable when a patient's previously adequate defenses have been undermined by illness, and in such situations the family physician is in the most strategic position to give help. He presumably already understands, or at least he has a head start toward understanding, the patient's personality and social situation well enough to evaluate his needs.

Hollis[2] points out that, in general, psychologic support is useful in carrying the basically well adjusted patient over a period of severe stress caused by painful experiences. It is also of value with childish and immature patients who are essentially in need of guidance. Many persons suffering from

the more severe psychosomatic difficulties and even mild psychoses can be helped to function somewhat better when psychologic support is provided. Although the basic problems of these patients might be modified by deep therapy, such treatment is often unavailable or too expensive.

Just as in environmental modification, careful diagnosis must precede the choice of technics. In dealing with Mr. C., for instance, the doctor should have formed a well substantiated opinion about the personalities of the aunt and grandfather, as well as that of the patient, and about the nature of the interrelation within the family, as well as about the emotional make-up of the patient, before he ventures to encourage him to greater independence.

Clarification

Clarification is sometimes called counseling, but the term "clarification" is here preferred because of the implications of "counseling" as a technic in which the patient is passive and the therapist the only active member. It is a process through which the physician helps the patient understand more clearly external realities and the feelings and actions of himself and those about him. It is predominantly an intellectual process and deals with thoughts and feelings of which the patient has been aware but whose relations to other thoughts and feelings have not been clear. As these relations become clarified, the patient may become aware of new thoughts and feelings of which he had only a vague or confused awareness before, and these too may require clarification. However, in clarification, as in support, with which it is frequently combined, the fundamental causes of emotional disturbance are not often dealt with. These usually require the handling of material below the surface and require the more intensive technics of insight development. Clarification is most often of value in helping the patient to line up more clearly the issues and possible effects in a decision. It may also help him evaluate the attitudes and motives of other people toward him, and he may become better able to understand his own motives and attitudes.

Clarification is carried out after the doctor has helped the patient talk freely about the troublesome aspects of his situation. Often a patient may clarify a problem for himself once he has discussed it with an understanding listener; at other times the problem may be resolved when accurate information is provided by the doctor. More often a sorting-out procedure is needed in which the doctor helps the patient establish relatively objective bases for his decisions or evaluations. This is accomplished by careful questioning, comments on inconsistent or inappropriate reactions and occasional interpretations of the meaning of words or actions of the patient or others in his environment.

Clarification might be necessary in addition to psychologic support in the original 4 subjects and could be handled as follows:

Case 1. Mr. A., even with psychologic support, may not see his way clear to accepting Government aid to his children while he is ill. In discussing his objections, he may relate it to his shame as a child when his family was on relief, or he may, through experience with some relative, be inwardly convinced that he will die anyway of tuberculosis and that treatment does not matter much. As these matters come to the surface, the physician may give him information about tuberculosis and modern methods of treatment. He may also point out the differences between the present help available and relief, and through giving him understanding of his feelings of shame in early years help him to see that this old emotion is not applicable to the present circumstances and is interfering with his judgment.

Case 2. In like manner, Mrs. B. may be found to believe, as hyperthyroid patients often do, that if she is away from home disaster will inevitably overtake her family because she is not present to ward off danger by what has been termed "the magic of obsessive worrying." By helping her to evaluate this feeling and perhaps to see clearly that after operation she will have a greater ability to carry out her work, she can be helped to make the decision in a mature way. This would be in addition to supportive treatment and environmental modification as outlined above.

Case 3. Mr. C. may feel very guilty about having accepted so much from his aunt without contributing, whereas she has been working all the time, and may think that he cannot make it up to her. He also may believe that his grandfather would be maltreated or unhappy at a home for the aged. He may be helped through clarification to see that a good deal of his grandfather's querulousness is owing to the lack of companions with similar interests. The doctor might point out the natural conservativism of old people and indicate the probability that an adjustment eventually could be made to an old people's home even though the grandfather now objects strenuously to any change. Mr. C. may be helped to see that his aunt gets a good deal of gratification out of his scholastic progress, that she is much less resentful about the need to take care of him than he thinks she is and that his presence has actually given more meaning to her life. In this way clarification would supplement psychologic support and help Mr. C. toward better adjustment.

Case 4. As the doctor listens to Mrs. D., he notes her tendency to blame Mr. D. exclusively for her troubles. He also realizes that she tends to depreciate and ridicule Mr. D.'s ideas and plans, and notes that his retreats to alcohol often follow manifestations of her need to control him. Although the physician cannot hope, through clarification, to change this character trait radically, he may help to relax the situation somewhat by pointing out the sequence of events. This would have to be done tentatively and tactfully, in an atmosphere of confidence, and without any appearance of taking sides in the marital conflict.

To be used to best advantage, clarification requires a relatively healthy personality, or a reasonably circumscribed problem. In patients who are in delicate emotional balance there is always the possibility of uncovering more problems than can be handled. Other psychoneurotic patients may use clarification to reinforce intellectual defenses against really coming to grips with their problems — some patients do this through reading and discuss their own psychology in learned but unproductive terms. Therefore it must again be emphasized that diagnosis precedes treatment in this as in all phases of medicine and that an evaluation of a patient's

strengths as well as his weaknesses is a prerequisite to proper handling.

Clarification is the technic in which it is easiest for the physician to use his influence to push the patient into one decision or the other, and to rationalize this controlling tendency by telling himself that he is more experienced, more intelligent, more objective and so on. If his aim is the greater maturity of the patient, and not exclusively the best solution of a single problem, he may be less tempted to play an authoritarian role.

Insight

There are several reasons why development of insight is a method of treatment that is ordinarily restricted to doctors with specialized training in psychiatry. In the first place, just as the surgeon requires experience in surgery to handle the unexpected problems that may arise once the abdomen is opened, the psychiatrist's training gives him experience in handling the problems that arise when the patient becomes aware of thoughts and feelings that have been buried beneath the level of consciousness. The doctor must have had enough experience not to be upset by the feelings from both the immediate and distant past that are re-experienced in this type of treatment. If he is upset by them, he makes the patient more, rather than less, anxious about them. Treatment of this type should be an experience in which the patient is desensitized to the past disturbances that, without his knowing it, distort his reactions to the present; this requires more familiarity with unconscious mechanisms than can be fitted into a medical-school curriculum.

Secondly, this approach to treatment requires more time and a greater adherence to schedule than the man in general practice can usually manage. The interplay of feelings, both friendly and otherwise, between doctor and patient is greater in degree and more complicated to handle than in other forms of treatment. The modifications in treatment schedule necessitated by emergency demands on a general practitioner are not well tolerated by a patient undergoing intensive psychotherapy.

Finally, although the position of the general practitioner as family friend and neighbor may make other forms of treatment easier, it usually makes the type of relation necessary for development of insight more difficult. Patients find it hard to express thoughts of which they are so ashamed that they have not been able to face them alone to someone with whom they will have cocktails later in the same day.

But even in a patient who is a severe neurotic the general practitioner plays a major part in treatment. His care in diagnosis and his skill in referral are important determinants of the success of treatment. The doctor may need to use both support and clarification in dealing with the patient's anxieties and misapprehensions about the nature of emotional disturbances. If a patient thinks that his doctor is contemptuous of him for suffering from an emotional disorder, or if he believes that to need help for emotional problems is equivalent to insanity, or that his doctor is looking for a way to get rid of him, the referral to a psychiatrist is not likely to be utilized to best advantage if at all.

Sometimes, referral is impossible for economic, geographic or other reasons, even when intensive treatment is strongly indicated. Often, psychologic support or environmental modification can be used to maintain these patients. If development of insight is attempted, the doctor must be careful to help the patient recognize the inappropriate nature of his past feelings in the present situation and not foster rationalizations for continuing such inappropriate associations. Thus, if the patient is told that it is natural for him to react neurotically because he had such an unpleasant childhood, he will find it easier to accept his neurotic behavior and have less motivation to try to alter it.

Development of insight is always accompanied by some degree of clarification and psychologic support. Psychologic support often provides the base upon which the patient moves on to the more difficult process in achieving insight.

There may be possibilities for insight therapy in the 4 typical patients:

Case 1. One may find that Mr. A.'s reasons for not coming to the sanatorium were in reality defenses against the extremely dependent situation of a patient in such an institution. Although time will not permit the development of insight before he arrives at the sanatorium, once he is there it may be advisable to help him to recognize the disturbing early factors in his environment that make him afraid of any situation in which he is helpless and under the control of other people. Only to the extent that he can rid himself of anxiety about the passivity of his situation can he relax enough really to rest and make the best of his sanatorium treatment. Without the development of some insight he may displace some anger from the early family relation onto the authoritative figures in the institution, and may therefore be more inclined to leave the hospital prematurely. Psychiatric treatment in this case would be considered an adjunct to the treatment of the tuberculosis.

Case 2. Although support and clarification may help Mrs. B. through her surgical experience, she may continue to be anxious and tense. Then (or in some earlier cases before the necessity for operation becomes urgent), she may be helped to recognize the degree to which she has carried over earlier insecurities into her present-day life. Typically,[5,6] she would first realize that she has always felt less wanted than others in her family but has attained a great deal by compensation so that she will be accepted. She can then be helped to recognize that the conditions of today are not the conditions of yesterday and that she is accepted on the basis of herself rather than what she has accomplished. As she becomes more secure in this realization, she will be less frightened and will have less need constantly and exclusively to be giving and doing for others; she will thus achieve a more relaxed and balanced life. With Mrs. B., however, one might expect the eventual development of a strong dependency on the therapist as she recognizes the needs she has denied herself in the past, and the therapist would need to be keenly aware of the implications of this so as not to cause more anxiety by his relation to his patient or to undo what he has

accomplished by breaking off treatment without realizing the degree to which she is dependent. Often, in patients of this type, development of insight may produce too much anxiety, and treatment should stop at the level of support and clarification.

CASE 3. It may become evident that Mr. C.'s inability to move toward placement of his grandfather in an old people's home results from a feeling of guilt because of early hostility toward his own father, whose subsequent desertion of the family was caused, in the patient's fantasy, by this hostility. He may then feel unable to do anything that might be interpreted by his grandfather (a father-figure) as a rejection or an angry act. Some of the same feelings might be determining his inability to establish relations with people outside his family group. He may feel so insecure because of the early loss of his mother that he hangs onto his aunt's apron strings. Perhaps only by aid in developing insight into his anxieties and hostilities can he be helped to handle the situation at home as well as his somnambulism.

CASE 4. As supportive treatment progresses, Mrs. D. may realize to some extent the part she plays in the marital conflict and may ask for help in some fundamental modifications in her approach to marriage. She may then be helped to accept referral to a psychiatrist, who may, in turn, find evidence of early feelings of inferiority as a girl, in a family where boys were much more welcome than girls. It would take some time to uncover and work through this problem, since her initial defensive approach would be to belittle men and insist that women had to protect and take care of them.

Although these technics are cumbersome to describe, their actual application (except for insight) requires considerably less time than the description indicates. They pay off, in the day-to-day routine of practice, in good will and even in time as the emotional blocks to effective use of other forms of treatment are dealt with. The improved doctor-patient relation resulting from the recognition and handling of emotional needs helps give the patient confidence that the physician is really interested in him as an individual. The physician who feels reasonably secure in his awareness of indications for, and his use of, environmental modification, psychologic support and clarification is not so threatened or made so anxious by the emotional elements that play a large part in many of his patients.

SUMMARY

The major technics of handling emotional problems in the setting of general practice are described and illustrated by discussions of typical cases.

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RELATION OF GROWTH OF HAIR ON DIGITS TO THE SEVERITY OF ISCHEMIA*

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IN the management of patients with gangrene one is frequently confronted with the difficulty of deciding whether conservative treatment should be continued or amputation advised. Present-day tests do not always offer help. During observation of the course of patients with ischemic, necrotic lesions it was noted that when there was a good growth of hair on the toes the lesions almost always healed. On the other hand, when the hair growth was reduced or absent on the toes of an ischemic extremity, as compared with the opposite extremity, lesions rarely healed, and amputation was necessary in most cases. Although it has previously been reported that growth of hair will stop in the very ischemic extremity,‡ this observation has remained purely descriptive and not applied to the management of these patients. It was therefore decided to study a large group of patients with ischemia to evaluate this simple clinical sign.

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METHOD OF STUDY

The number of hairs present on the ten toes was recorded. Where the hair was unusually long or where it was at least 50 per cent shorter on one foot than on the other, this fact was noted. If the hair had turned blond on the ischemic foot, as compared with the opposite foot, this was also recorded. Where the hair was difficult to see, as in blonds or Negro patients, a magnifying glass and good light were useful.

The circulation was determined in each patient by palpation for pulses, observing color changes with the legs elevated and dependent, noting temperature of the feet, oscillometric readings and vasodilatation tests.

Of the total of 463 subjects studied 173 were patients with occlusion of either the popliteal or the femoral arteries. The latter group included 139 in whom the occlusion was caused by arteriosclerosis (24 due to thromboangiitis obliterans and 10 due to embolism). Ischemia varied from mild to severe. Fifty-three of these patients had gangrene, 17 requiring amputation. Two hundred and ninety

subjects had no arterial disease and were observed to obtain a baseline for the number of hairs on the toes in the presence of normal blood flow.

Many of the patients have been followed for at least a year, and some for two years.

Results

Most normal people have hair on the toes. Only 18, or 6 per cent, of 290 normal subjects under the age of eighty had none. The hairs were somewhat fewer and shorter in women than in men in most cases. The number of hairs on the great toe varied from 0 to as many as 40 for an average of between 15 and 20 hairs for male patients under fifty years of age. The length of the hairs varied from 2 mm. to 2.5 cm. After the age of fifty a sharp reduction in the number of hairs on the toes began. Five of the 8 normal subjects who were over eighty years of age had no hair on the toes. The loss of hair on the toes was unrelated to scalp baldness.

When hair counts were done in the group with severe ischemia, it was found that in the most severe cases there was no hair on the toes of that extremity, in contrast to the presence of hair on the toes of the opposite, more normal extremity. With mild or moderate ischemia hair growth was normal. However, it is the group with severe arterial disease that is most important, since such cases often require amputation. In contrast to the 6 per cent of normal subjects without hair on the toes, 10 of 17 patients, or 58 per cent, who subsequently required amputation had no hair growing on the toes of that foot, whereas there was an ample number of hairs growing on the toes of the opposite foot. Of the remaining 7 who required amputation, all had marked reduction in number of hairs as compared with the opposite, more normal extremity. Where there was ischemia of both feet, the foot with the more severe ischemia always had less hair than the foot with the better circulation.

Not only was the number of hairs reduced but also the hair frequently was considerably shorter on the foot with severe ischemia than on the normal foot.

Where circulation improved, a useful sign was the beginning of growth of blond hair, which within a month became black. The appearance of growth of blond hair in a very ischemic foot, where no hair had been growing previously, always indicated an improving circulation.

Although all the ischemic patients were studied as thoroughly as possible from the standpoint of determining the degree of impairment of circulation, including oscillometric readings and vasodilatation tests, observation of the presence or absence of hair on the toes proved of considerable diagnostic and prognostic importance. In the group with severe ischemia, the presence or absence of hair often indicated whether the extremity would survive. Observation of the hair on the toes was an aid in deciding whether medical care should be continued or surgery recommended. If there was no hair on the toes of one foot with a necrotic lesion, with hair present on the opposite toes, usually the leg could not be saved. However, in 2 patients with gangrene who had no growth of hair on the affected toes profuse growth of hair followed lumbar sympathectomy, with subsequent healing (Fig. 1).

A B

Figure 1. *Appearance of the Toes of a Twenty-One-Year-Old Man with Thromboangiitis Obliterans. Before sympathectomy, there is no hair on the ischemic toes of the right foot but normal hair on the normal toes of the left foot* (A). *After sympathectomy, there is considerable hair growth on the toes of the right foot, and the site of amputated toes is healed* (B).

On a number of occasions amputation was postponed because there was hair on the dorsum of the toe, and usually the lesion healed. One patient begged to have a toe amputated because of a painful lesion that had been present for several months. However, because he had a profuse growth of hair on the proximal phalanx, operation was not advised, and the toe healed in five weeks (Fig. 2)

In another instructive case a forty-five-year-old man complained of pain for two years in the left calf on walking about 100 yards; coldness, numbness and pain in the toes of the left foot developed. Subsequently, he injured the left great toe and severe pain at rest developed. The toenail was removed, after which necrosis of the nail bed occurred. Amputation of the great toe had been advised. When he was seen in April, 1951, the left dorsalis-pedis and posterior-tibial pulses were absent. Oscillometric readings were considerably reduced at the left ankle as compared with those at the right. The left foot blanched rapidly on elevation and was ruborous in the dependent position. Gangrene of the nail bed of the left great toe was present. Encouraging, however, was the fact that this man had 18 long hairs on the left great toe and a normal number of hairs on the other toes of this foot. Because of this observation, it was advised that he continue medical treatment rather than have the toe amputated. Healing took place. Had the great toe been amputated it is conceivable that further higher amputation would have been necessary, as is often necessary with great-toe amputations.

Another patient had one leg amputated, and a necrotic ulcer on the opposite heel developed. The opinion was asked if this patient could be discharged. Because there was long hair on the toes of the remaining foot it was suggested that she could go home. The lesion healed without difficulty. This question of whether a patient can be discharged after prolonged treatment for ischemia is a common one. The patient mentioned above (Fig. 1) had spent a number of months in the hospital with toe amputations and lumbar sympathectomy and the question arose whether he could go home. The fact that there had been no hair on the toes before sympathectomy and that blond hair had appeared after the operation indicated that a good collateral circulation was developing. He was sent home, and when he returned two months later the site of amputation of the fourth and fifth toes had healed and the hair was black (Fig. 1*B*).

When patients had no growth of hair after sympathectomy there was no improvement in blood supply to the foot as the result of the operation.

The value of observation of the hair on the toes makes itself evident constantly. When a patient gives a history of chronic ischemia and, on examination, one sees a profuse growth of hair on the toes, one is able to say clinically that there must be a good blood flow to the toes, despite the presence of occlusion of a major artery. It is well recognized today that a patient may have occlusion of as large a vessel as the femoral or iliac artery and yet have an excellent collateral circulation, complaining, perhaps, only of moderate claudication. Such a patient was a fifty-seven-year-old man who had had bilateral popliteal embolism as the result of auricular fibrillation three years previously. On

A B

FIGURE 2. *Appearance of the Toes in a Thirty-Two-Year-Old Man with Thromboangiitis Obliterans Who Requested Amputation Because of Severe Pain.*
The tip of the right second toe is necrotic (A). *There was ample growth of hair on the toe* (B), *which healed in five weeks.*

examination, there was an abundant growth of long hair on the toes of both feet. It was obvious that he had a good collateral circulation. The color changes on elevation and dependency of the feet, oscillometric readings and the rest of the examination confirmed the opinion derived from the observation of hair growth.

There were some cases in which the hair count was of no value. For example, a patient with hair on a necrotic toe had difficulty in healing a lesion. Amputation was done, but healing failed to occur. Later transmetatarsal amputation also failed, and leg amputation was necessary.

Patients with severe ischemic neuritis who have constant severe pain will occasionally require amputation despite the presence of hair on the toes. In these patients amputation is usually done for unbearable pain and not because of gangrene.

The hair count was of no value in managing patients with acute thrombosis or embolism, at least during the first few days after the acute arterial occlusion, since there had been insufficient time for the hair to fall out.

When hair is counted, the age of the patient must be taken into consideration, for 7 per cent of normal persons in the sixties had no hair on the toes compared with 2 per cent of those in the twenties. However, in the great majority of normal subjects there is hair on the toes, even in those over seventy years of age, of whom 78 per cent still had hair on the toes. If there is hair on the toes of one foot in an ischemic patient and not on the toes of the other, this suggests that the ischemia is responsible for the lack of hair on the more ischemic foot. This is evidenced by the statistics of ischemic patients in the seventies, of whom 60 per cent had no hair on the toes, whereas only 22 per cent of the normal subjects had no hair. The mere absence of hair on the toes of an ischemic foot does not mean that that extremity will require amputation. It simply means that, if the patient has a lesion, it will be more difficult, if not impossible, to heal.

Discussion

Patients with gangrene are often kept in the hospital for months because it is hoped that healing will take place. Many eventually go on to amputation, but, since it is not certain which will require amputation, all are treated medically for long periods. Observation of hair on the toes led to greater assurance in deciding which patients with gangrene should continue with treatment and in which amputation was inevitable. When good hair growth was present on toes with necrotic lesions treatment in most patients resulted in healing.

Other factors concerned in the growth or lack of growth of hair include heredity, the endocrines, aging and nutrition. In this group of patients, however, it is obvious that the severe reduction in circulation to the toes is the cause of the reduced growth of hair or lack of growth.

Summary and Conclusions

Observation of the hair on the toes proved a useful clinical sign in evaluating severity of ischemia. This sign enables one to tell with greater assurance whether healing of gangrenous lesions can occur. If there is enough blood to maintain growth of hair on the toes, there is usually enough blood to heal lesions. When the blood supply is insufficient to permit growth of hair on the toes, lesions rarely heal, and amputation is necessary in most of these patients.

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MEDICAL PROGRESS

GENERAL PRACTICE, TODAY AND TOMORROW* (Concluded)

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In the first part of this report reference was made to the lack of definition of general practice. Because of this lack, with its resulting ambiguities of status, limitations and responsibilities, many young physicians are unwilling to take up what appears to be an outstandingly thankless form of medical practice. Such a situation gives rise to a vicious circle prejudicial alike to the best interests of the medical profession and the public.

Is it, then, possible to define and describe what the general practitioner of the future must *know* and must *do*? This is quite possible, and can best be demonstrated initially by diagrams. Figures 1 and 2 are designed to show the real and practical diagnostic and therapeutic demands of general practice.

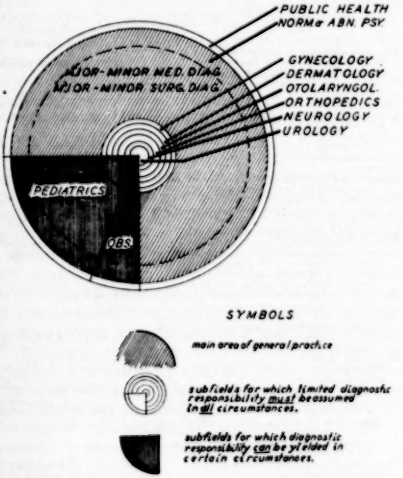

FIGURE 1. *Diagnostic Responsibilities of the Qualified General Practitioner.*

In these diagrams, outstanding points to be noted are as follows:

At least 75 per cent of the work in general practice falls into the fields of *major and minor medical and surgical diagnosis* and *major and minor medical treatment*, with undetermined overlapping into the field of psychiatry.

Certain special fields can be, and frequently are, omitted from general practice. (This is important in terms of function and education of the general practitioner.)

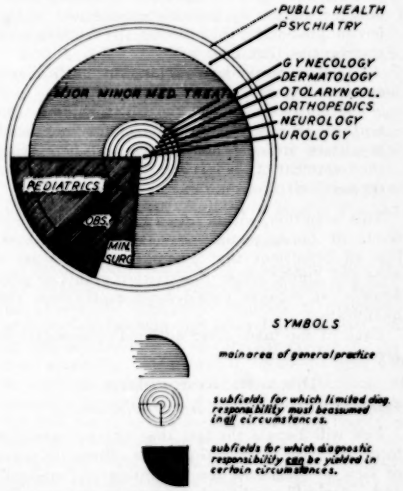

FIGURE 2. *Therapeutic Responsibilities of the Qualified General Practitioner.*

Certain special fields — principally psychiatry, dermatology, neurology, gynecology, orthopedics, otolaryngology and urology — cannot be omitted, being an essential part of all general practice. They are entered on the diagrams in such a way as to suggest their extent in general practice.

Before details of the full implications of all this are considered, a concise and explicit definition of

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a general practitioner is necessary. The following definition is presented in terms of function and responsibility, rather than in the broad and abstract terms so often used when previous attempts have been made at definition.

Definition of a General Practitioner

A general practitioner is a graduate in medicine from an approved medical school who, after a specific hospital training, is capable of assuming responsibility for the following areas of medical care:

The diagnosis of all major and minor medical and surgical conditions (except extremely complicated and rare ones).

The treatment of the great majority of the medical conditions diagnosed (but only the really *minor surgical* conditions).

Obstetrics to the level of uncomplicated deliveries, the early recognition of abnormalities and the necessarily immediate treatment of the few unpredictable but potentially catastrophic emergencies that may arise.

Pediatrics to the level required for medical and surgical diagnosis and treatment.

Psychiatry to a level permitting the differentiation of serious, potentially serious and mild psychoses and psychoneuroses, and permitting the treatment of the last mentioned by intelligent support, clarification and reassurance.

This definition, within broad limits, is specific in terms of function and responsibility. However, like all definitions that attempt to encompass a wide and diffuse range of activities, events or phenomena, it requires considerable explanation and qualification.

Each of the main areas outlined is discussed in greater detail below.

Diagnostic Responsibilities

Internal Medicine and Surgical Diagnosis

Few will dispute the fact that internal medicine forms the basis of general practice. From the point of view of diagnosis, the separation of "medical" and "surgical" conditions is arbitrary and unrealistic; this decision is frequently a matter of personal opinion, custom, convention or prejudice. For these reasons the fields of internal medicine and surgical diagnosis are considered together.

For a full understanding of the responsibilities of the general practitioner in this broad and major field of endeavor, it must be broken down into component parts, which can then be considered separately.

Functional conditions. A large proportion (36 per cent) of the problems confronting the general practitioner are functional conditions. This does not mean that they are superficial problems, undemanding of time and the exercise of thorough clinical procedures — if anything, they are more demanding than the problems associated with overt organic disease.

The establishment of a sound and certain diagnosis of functional disorder may require more thorough physical examination, more detailed history taking and more laboratory procedures than — for example— the establishment of a diagnosis of pernicious anemia or carcinoma of the cervix.

Consequently, functional conditions are considered further when psychiatry in relation to general practice is dealt with.

Serious emergencies and potentially serious diseases and conditions. These are best demonstrated by a list of such conditions, which any busy general practitioner is likely to encounter in the course of his work. Consideration of these is limited to conditions likely to respond to specific surgical or medical treatment and is accordingly incomplete. Table 1 sets out these conditions and attempts to indicate the regularity with which they are likely to be encountered. This is not offered as a true volumetric analysis, but merely as a probable indication of frequency.

Table 1. *Emergencies and Potentially Serious Illness Tending to Respond to Specific Therapy.*

Condition	Frequency of New Cases
Acute cardiovascular and pulmonary:	
Acute congestive heart failure	1 each week or month
Coronary thrombosis with infarction	
Serious embolic phenomena, venous and arterial	
Acute surgical abdominal and pelvic	1 each week or month
Chronic abdominal and pelvic disease	1 each week or month
Recurrent pancreatitis	
Colitis	
Diverticulitis	
Endometriosis	
Trauma	
Serious head injuries, fractures of the extremities, major lacerations and so forth	10–25 each year
Carcinoma involving major organs (cervix, breast, prostate, colon, brain and so forth)	5 each year
Serious fluid and electrolyte imbalance	1–5 each year
Infections (diphtheria, rheumatic fever, meningitis, overwhelming extremity and lung infections, acute glomerulonephritis, subacute bacterial endocarditis, acute laryngotracheobronchitis and so forth)	1–3 each year (considering whole group
Diabetes (associated with *coma* about once every 7-10 years)	1 each year
Blood dyscrasias (pernicious anemia, primary thrombocytopenic purpura and so forth)	Every 1-2 years
Syphilis (positive serologic test usual only finding)	1 every 2-3 years
Metabolic diseases:	1 every 2-3 years
Thyrotoxicosis	
Hypothyroidism	
Poisoning (attempted suicide and others)	1-5 each year
Infrequently seen and complicated conditions (unexplained congestive heart failure from rare type of myocarditis, combinations of such conditions as hypothyroidism and rheumatic heart disease with congestive cardiac failure and so forth)	2-3 every year (considering whole group)
Very rare diseases and conditions:	1-2 in 25 years (considering whole group)
Cushing's syndrome	
Pheochromocytoma	
Dermatomyositis	
Lupus erythematosus	
Sprue	
Lymphoma of abdominal viscera	

Approximately 80 to 90 per cent of these illnesses *as seen in general practice* (not as seen in teaching

hospitals) can be diagnosed with reasonable accuracy by any well trained general practitioner who takes a good history, does a thorough physical examination and utilizes the simple laboratory facilities that should be available in his office or in the local hospital.

A well trained general practitioner does, or should be able to, deal with (except for major surgical treatment) a high percentage of these conditions in a manner that would satisfy any specialist. However, he may need to consult with one of a number of his specialist colleagues about treatment, with whom he therefore requires a close working relation.

Routine and relatively minor diagnostic problems. The more serious conditions listed in Table 1, which are encountered "once weekly" or less frequently, do not constitute a large volume of practice. However, many patients present symptoms that tentatively place them in this category, where they remain until the seriousness of their condition has been eliminated.

Once it has been determined that a patient is suffering from organic disease, he may have to return again and again for "routine care" for months, years or even a lifetime. In addition, a large group of frequently encountered minor conditions may be diagnosed at a glance or may require only short observation; among these are relatively harmless upper respiratory infections, superficial infections, many skin diseases, obvious hernias and lipomas.

Routine physical examinations. People do not yet readily accept, or demand, yearly physical examinations, although it is possible that the time is approaching when they will. They adopt a different attitude toward examination of their children.

At present the group of persons receiving routine physical examinations can be divided as follows: the relatively few patients who are symptom free and yet request physical examinations; examinations conducted for insurance companies; and the occasional person who asks for an examination for "cancer."

The routine examination of the symptom-free patient rarely requires more than "primary screening," which is discussed below. Routine examination for insurance purposes is too well known to call for comment. The rare "cancer examination" in addition to "primary screening" should include sigmoidoscopy, Papanicolaou smear and roentgenograms of the lungs and heart and, in certain cases, upper and lower gastrointestinal series. Occasionally, further laboratory studies and consultations are necessary.

Complicated diseases and conditions introducing insurmountable diagnostic problems. In rare cases common conditions present so atypical a form as to defy the best of general practitioners (or individual specialists). Similarly, multiple pathologic conditions may present a picture too complicated to be resolved by any one man. Such cases may call for the efforts of a whole corps of specialists who have available elaborate laboratory and radiologic facilities, implying, of course, the resources of a large modern hospital.

It is suggested that the general practitioner encounters these problems, as contrasted with the others mentioned above, with a frequency of about 1 in 1000.

Rare diseases and conditions. Under this heading come conditions with which the general practitioner may not have to deal more than once or twice in a lifetime (such as Cushing's syndrome, lupus erythematosus and localized amyloid disease).

The best that can be hoped for is that through reading, attendance at grand rounds and so forth, the general practitioner will keep these conditions in mind and, having made a tentative diagnosis, will see that the patient gets the best of medical care.

It is suggested that the general practitioner faces these problems, as contrasted with the others mentioned above, with a frequency not greater than 1 in 10,000.

This analysis offers a detailed account of the medical and surgical diagnostic problems with which the general practitioner is likely to be confronted. It also suggests the frequency with which they may occur, and claims for the well trained general practitioner the capacity of satisfactorily dealing with most of them.

In substantiation of this claim it is necessary to discuss the diagnostic routines of general practice.

Diagnostic Routines

The diagnostic routines of general practice can be broken down into primary and secondary screening (Table 2). The great majority of diagnostic problems confronting the general practitioner will be resolved as a result of carefully conducted primary screening. A further significant number will be resolved by the application of the technics of secondary screening, and a combination of these two will meet the requirements of most people in most circumstances today.

However, if the general practitioner is to conduct practice at this level, he needs access, directly or indirectly, to specialists representing fifteen or twenty different fields and this brings up the question of his relation to the consultant.

Relation of the General Practitioner to the Consultant

The most constantly required consultants are the roentgenologist and the pathologist (more immediately, perhaps, a first-rate laboratory technician, the accuracy of whose work can be depended upon, since the well trained general practitioner should himself be able to interpret most properly presented laboratory data). The proper utilization of the services of these two consultants should enable

him to handle adequately the majority of diagnostic problems discussed above.

Complicated, rare conditions may require the assistance of a whole range of consultants. Sometimes telephone consultations suffice.

However, other valid, if less imperative, reasons frequently make consultation desirable. These are reassurance of the patient who may desire specialist confirmation of a serious diagnosis, and reassurance of the general practitioner himself, who has made such a diagnosis.

This deals only with consultations in relation to diagnosis. Any well conducted general practice is a loosely organized but effective "group practice," with all consulting specialists official or nonofficial members.

TABLE 2. *Components of Diagnostic Routines in General Practice.*

TYPE OF SCREENING	PLACE OF EXAMINATION	COMPONENT OF SCREENING PROCEDURE
Primary	Office	Initial history Physical examination (including blood pressure and rectal or pelvic examination, or both) Laboratory — urinalysis, white-cell count, hematocrit
Secondary	Office*	More detailed history More detailed physical examination, which may include proctoscopy, sigmoidoscopy, examination of larynx, examination of fundi, fluoroscopy, x-ray study of chest, Papanicolaou smear, biopsy of cervix and skin, electrocardiogram, basal metabolic rate; blood for serologic tests taken and sent to central laboratories. Laboratory — repetition of procedures listed under primary screening, with more detailed blood microscopy and perhaps some elementary blood chemical and stool examinations
	Local hospital*	Physical examinations (examination under anesthesia, sometimes sigmoidoscopy); in more developed circumstances may include retrograde cystoscopy, upper and lower gastrointestinal series, pyelography and cholecystography, as well as more extensive biopsies. Laboratory (blood chemical, blood sugar, chloride, nonprotein nitrogen, blood urea nitrogen and cerebrospinal-fluid examinations, blood and urine cultures); in more developed circumstances, such determinations as serum protein and blood cholesterol may be made as well as, occasionally, blood serologic test, although this will usually be sent to central laboratory; electrocardiogram and basal metabolic rate may be done at hospital rather than office.

*Components listed in order of diminishing significance.

As Figure 1 illustrates, there are certain specialties that to a limited extent play a continuous and unavoidable role in all general practice. Principal among these are gynecology, dermatology, otolaryngology, neurology, urology, orthopedics and psychiatry.

For a full appreciation of the relation of general practice to specialty services the extent and limitations of diagnostic responsibility that the general practitioner must assume in each of these fields must be considered in some detail.

Gynecology

Any good general practitioner must be capable of making a thorough pelvic examination and elucidating all common diseases. He must be as capable as any specialist, in the diagnosis of uterine displacements, in the location and evaluation of the possible significance of pelvic masses (not necessarily arriving at a final diagnosis, which is frequently impossible without surgical exploration and biopsy), and in the visualization of vaginal and cervical abnormalities. He should also be able to take cervical biopsies and vaginal and cervical smears, and must have a good working knowledge of the endocrinologic aspects of gynecology.

Within these specific limits lies the general practitioner's responsibilities for gynecologic diagnosis. In the great majority of cases all this should be possible in office practice; however, he may occasionally have to resort to the hospital for an examination under anesthesia.

Dermatology

In this specialty clear delineation of responsibility is much more difficult. The general practitioner should be capable of diagnosing the common and typical skin ailments such as scabies, psoriasis, ringworm, obvious allergic responses and superficial bacterial infections. He should furthermore be able to make sound correlations between skin manifestations and systemic disorders in such conditions as syphilis, herpes zoster and infectious diseases like measles and chicken pox. He should not, however, try to treat indefinitely nonspecific and intractable skin conditions and should have recourse to the specialist whenever in doubt.

Otolaryngology

The diagnostic responsibilities of the general practitioner in this field are quite circumscribed. He should be able to visualize the tympanic membrane and the larynx and to recognize abnormalities in both these areas.

He should be reasonably specific about the condition of the ear, recognizing perforations, inflammations and the need for myringectomy, which he should be able to perform. Regarding the larynx, all that is necessary is to recognize, by means of history and if necessary examination with the laryngeal mirror, an abnormal state of affairs (such as paralysis of the vocal cords and nodules) so that the patient can be referred to a specialist.

It goes without saying that the general practitioners will be able to appreciate and assess the seriousness of inflammatory and erosive conditions of the throat and associated tissues.

Neurology

Neurologic diagnosis has a limited, constant and important place in general practice. The saving of life and the preservation of function frequently depend on accurate, early diagnosis of neurologic conditions and others with significant neurologic manifestations.

The rarity of these conditions makes the burden of responsibility for correct diagnosis all the heavier. In a long life of active work, the general practitioner is likely to come in contact with a relatively short list of these conditions, most of which can be considered here. Continuous alertness to the possibilities, caution and the application of simple but accurate technics of neurologic examination and the interpretation of spinal-fluid examinations are the keys to successful diagnosis in this field.

The urgent conditions with which a general practitioner must always be prepared to deal, in order of greatest probability, are as follows: acute conditions, including head and spinal injuries with associated bone fractures, pressure and hemorrhage (notable in this group are simple concussion, simple and compound fracture of the skull and vertebral column, subarachnoid hemorrhage and subdural hematoma), as well as cerebrovascular accident, meningitis and acute encephalitis, poliomyelitis, cervical rib, tetanus, brachialis-anticus syndrome, rupture of intervertebral disks and epidural abscess of the spinal cord; and chronic disease, including brain tumor and abscess and tumors of the spinal cord.

If accurate and early diagnosis can be made in the conditions listed above, treatment is frequently specific, dramatic and often life saving.

In addition to these urgent conditions, there are neurologic diseases occasionally seen by the general practitioner in which accurate diagnosis can lead to specific therapy that will give the patient at least some relief and improvement. The more important of these conditions are as follows: paralysis agitans; subacute combined degeneration of the spinal cord associated with pernicious anemia; epilepsy; chorea; and such toxic conditions as nicotine, lead and beryllium poisoning.

It is also reasonable to expect the general practitioner to be capable of making tentative diagnoses of such intractable neurologic conditions as disseminated sclerosis and amyotrophic lateral sclerosis.

It should be re-emphasized that the technics involved in these diagnoses are neither mysterious nor complicated, but call for accurate and careful observation, physical examination, lumbar puncture and spinal-fluid examination. Mistakes of tentative diagnosis in this area are inexcusable and frequently fatal.

Urology

The general practitioner must be able to diagnose such common conditions as cystitis and pyelitis. He should, without undue strain on his capabilities, be capable of suspecting conditions like renal, ureteral and bladder calculi; he must be trained to recognize an enlarged and otherwise abnormal prostate and to differentiate (or take steps to have immediate differentiation made) an inflammatory and a malignant condition of this gland. He should also be capable of suspecting latent and possibly serious lesions, such as congenital anomalies of the ureter, blood vessels and urogenital tract. Although tentative diagnosis is usually not difficult, the final word should come from a specialist or a surgeon with much special training in urology, whose interpretation of intravenous pyelograms and other x-ray films leaves little to chance.

Orthopedics

Responsibility of the general practitioner in this field is extremely restricted: to diagnose simple fractures and dislocations and to give emergency care to more serious traumatic bony injuries. He should furthermore be able to recognize the serious or not so serious congenital anomalies and thus be prepared to give ready advice to parents in these matters. He should also be able to diagnose tentatively such conditions as ruptured intervertebral disk in the cervical and lumbar regions, Osgood–Schlatter disease, Legg–Calvé–Perthes disease, bone tumors, shoulder-arm pain based upon the brachialis-anticus syndrome and other orthopedic conditions frequently met.

Psychiatry

Medical educators place psychiatry very high on the list of the fields in which general practitioners should have special aptitudes and education. This is not surprising. To begin with, it is obvious that every physician who acts in any capacity immediately exerts, directly or indirectly, consciously or unconsciously, great influence on the nature of the emotional responses of his patients. It is also obvious that both the accuracy of diagnosis and the efficacy of care depend in considerable part on the understandings provided by psychiatry.

There is, furthermore, the impressive consideration that about 36 per cent of all patients who seek assistance from medical outpatient departments are suffering primarily from some form of emotional difficulty. And there is finally the recognition that the general practitioner, with his opportunity to maintain a deep interest in his patients as people, is well equipped, by tradition and circumstance, to render the kind of continuous and understanding medical attention required by those suffering from the milder emotional disorders.

For all these reasons the general practitioner has increasingly been assigned to duty at the right hand of the psychiatrist and, in view of the fact that trained therapists are in short supply, to act as a substitute for him.

There is grave doubt whether the field of psychiatry is sufficiently developed or whether there is at the moment a series of sufficiently stabilized procedures to permit any but the most fully informed and trained to practice it effectively at anything but a superficial level.

The general practitioner should be able to act effectively by support, clarification and reassurance in the day-to-day doctor relation, but he should not go beyond this point. He cannot be expected to deal safely with the more persistent neuroses or major psychoses. Under the present system of medical education, he does not learn enough, and the conditions of his practice and the nature of psychiatric therapy do not allow him enough time to handle these problems properly.

Finally, there is the danger that overloading the concern of the general practitioner for emotional factors will interfere with his essential search for organic disease. His primary obligation in general practice is to meet the true medical emergencies and then, as best he can, to care for the functional problems.

Even when the symptoms are those of flagrant psychoneurosis, the general practitioner must proceed to eliminate all organic disease — he must not forget that "neurotics are not immortal." The experienced physician can often make a fairly accurate diagnosis of probable functional imbalance a few minutes after history taking has started. He may therefore be bored by the prospect of a long and perhaps unnecessary history, physical examination and laboratory studies. But the history, the examination and the study are indispensable; no concern for psychiatric treatment or support can supplant them.

In view of the foregoing, the extent to which the general practitioner can safely enter the field of psychiatry appears, under present conditions, to be the ruling out of specific organic disease in functional cases after which he can make a tentative diagnosis of the emotional component present; having made the diagnosis, he can, in selected cases, proceed with the simple therapeutic measures of support, clarification and reassurance at his command. In cases of severe neurosis and in psychoses, he must refer his patients to psychiatrists.

Pediatrics

Where pediatrics is a part of general practice, it is an important part. It can constitute as much as 20 to 30 per cent of a general practitioner's activity, and it should be noted that 75 per cent of all pediatric care in this country is done by general practitioners.

Wherever the general practitioner embraces pediatrics, the same remarks as have been made regarding internal medicine and surgical diagnosis apply rigidly. The difference between this field and those discussed above is principally that in certain circumstances, notably in large cities, where numerous pediatricians are available, all responsibility may sometimes (and *must* sometimes) be relinquished by the general practitioner. In less populous areas some general practitioners (notably the older ones) yield responsibility to other general practitioners.

There are a few additions to be taken into account. Outstanding among these are an indispensable knowledge of feeding problems, normal growth development and the infectious diseases of children and an ability to diagnose the really important, potential surgical emergencies of infancy, particularly those resulting from congenital abnormalities of the intestinal tract. However, the additions to the areas that must be covered in adult medicine are few and relatively simple.

Perhaps the greatest demand, particularly in terms of time, on the general practitioner who undertakes the care of children is in the handling of behavior problems. Many of the remarks made above about psychiatry apply here.

In terms of time and technic, the demands for immunization and vaccination are insignificant.

Obstetrics

The remarks concerning pediatrics hold for obstetrics: general practitioners are doing the majority of obstetrics in the nation, and responsibility in large cities is increasingly being yielded to qualified specialists.

At a minimum, the general practitioner assuming responsibility for obstetric care must be able to conduct satisfactorily all uncomplicated deliveries and to recognize, in advance of labor, the abnormal conditions of pregnancy. This naturally presupposes careful prenatal work and when necessary the opportunity, on the detection of any abnormality, to send the expectant mothers before labor to specialist centers.

There are certain other minimal requirements for the general practitioner to meet. These are essential because of the never-ending combinations of unforeseeable, spontaneously occurring emergencies that can arise in obstetrics and can so easily end in tragedy and catastrophe. He must be able to control third-stage bleeding (short of performing cesarean section and hysterectomy), *whatever* the cause and to give a transfusion to an exsanguinated mother. He must also be able to perform (and repair well) a simple episiotomy and to effect a low forceps delivery. He must have a ready line of communication (the telephone will frequently suffice) to an obstetric specialist.

Finally, the general practitioner should be prepared to devote a considerable amount of personal attention to the expectant mother during her pregnancy and to give due regard to her usually normal, but profoundly important, psychologic problems.

Public Health

The over-all relation between general practice and public health is both tenuous and variable.

On the side of environmental sanitation, the average general practitioner plays a minor role, or no role at all. He may become aware of a source of infection during a major or minor epidemic, and may report this to public-health authorities. He

will sometimes notify the local department of health of communicable diseases, as required by statute, and so set in motion the machinery of quarantine and so forth. He may take an interest in problems such as food handling or particular industrial medical problems in the local industries of his community, but this is the exception rather than the rule.

On the side of "personal services" in the public-health sense (such as maternity and child welfare and school medical services) he frequently plays a much more significant part. This may be official or unofficial. If he is truly a family doctor and embraces the fields of pediatrics and obstetrics and if patients have full access to his services, he can make the so-called "personal services" of public health redundant.

He is undoubtedly potentially the best "health educator." He has the confidence and trust of the people in his community in a degree that no other individual, group or organization can hope to approximate. At the same time, he carries an authority beyond and above that of any health educator. His limitations in this direction are principally those of time to do the job properly, or lack of personal interest in the area that has come to be known as health education. However, in spite of himself, a good part of his time and effort is devoted to this end.

As for health education so for preventive medicine: the general practitioner, though limited in his opportunities, is potentially the best instrument of preventive medicine in a personal sense.

It should be emphasized that, despite the best of intentions and desires, organized mass medical services, such as mass radiography, school services, maternal and child welfare clinics, cancer screening clinics and multiphasic screening clinics, cannot be truly personal. Merely calling them personal does not make them so. If the same ends can be achieved, and it is suggested that they can, through the agency of the general practitioner, there is no excuse for mass impersonal, "personal" service. Indeed the threat of mass services has done much to induce the average general practitioner to perform certain routine examinations he might otherwise omit.

The foregoing remarks do not imply criticism of the many and great achievements of public-health services, nor do they suggest that the general practitioners of the country, as of today, can take over the work of the health officers. However, they are meant to set a goal to be aimed at, and to call attention to the desirability of truly personal services rather than mass services.

For the time being, the general practitioner has much the same relation to public health as he does, for example, to surgery. There is no suggestion that he can or should take over the function of the health officer or public-health clinics.

Therapeutic Responsibilities

Figure 2, setting out the therapeutic responsibilities of the general practitioner, is almost self-explanatory and needs only the briefest comment.

With the exception of treatments involving major surgery, the well trained general practitioner should be able to assume responsibility for the treatment of the great majority of conditions he diagnoses. The other broad exceptions to this general rule are conditions requiring special hospital care, notably pulmonary tuberculosis and psychiatric cases.

The general practitioner, particularly in this age of ever-changing and developing treatment, will need much more recourse to specialist consultation than he requires for diagnosis. However, after consultation, he should be able to supervise or carry out most therapy apart from that requiring rigid laboratory control.

The scope of responsibility of the general practitioner of the future and his prototype practicing today has now been discussed in some detail. These considerations have been laid against the background of an analysis of general practice today. The gap between the greater part of contemporary practice and projected theory is large, and will take many years to bridge.

General-Practitioner Specialist

There is yet another gap between general practice, even as defined for the future, and specialist services as of today or tomorrow. The second gap is bridged by the general-practitioner specialists, who offer their services to the people living in the smaller communities not served adequately by formally qualified specialists.

These physicians, meeting an urgent and frequently emergency requirement of contemporary society, are most of the time under attack or criticism by their more fortunately placed, formally trained colleagues, who themselves cannot hope to fill this need. These men are the victims of the wonders of twentieth-century technocracy; society cannot afford to have them become the human offerings on this altar of technical efficiency as long as it lacks the means of bringing the benefits of the higher levels of modern medical technocracy to everyone.

It is time for the role bestowed on the general-practitioner specialist as the result of practical necessity to be rationally considered and sensibly equated with the achievements and future possibilities of a more formal and better controlled specialist service. The general-practitioner specialist is here considered within this framework.

General practitioners frequently become interested in special fields of endeavor. In the early part of this century many became, through self-acquired postgraduate training and experience, the qualified specialists of the day. Gradually, this form of

"self-preparation" for a specialty and "self-elevation" to "specialist" status gave way to formal and specified training programs and registerable qualifications. Many of these general-practitioner specialists, although not qualified by formal training, have raised the standards of medical services in rural, semirural and small urban areas not served by formally trained specialists.

General-practitioner specialists fall into two broad categories — "medical" and "surgical." The former raise little interest or controversy; the latter are perhaps the most controversial figures in the entire medical scene. The reasons for the quiet acceptance of the general practitioner's role as a "medical" specialist and the frequently vociferous rejection of him as a "surgical" specialist are numerous, if not always logical.

The "medical" specialists usually embrace such fields as cardiology, chest disease, pediatrics and anesthesiology. The performance of these men is not always tangible and only rarely open to much scrutiny. Furthermore, the able, conscientious general practitioner who seriously desires to embrace these fields can usually find for himself accessible postgraduate courses, which will take him a reasonable distance along the road of specialist knowledge. The actual technics to be learned are limited; success rests on observation and interpretation of data rather than on technic. This is not meant in any way to underwrite the essential skills demanded by these specialties, but they are covert as distinct from the overt skills demanded in surgical fields. Similarly, "medical" errors are frequently covert, as contrasted to the overt errors of surgery.

The sound surgical specialist must acquire not only skills common to his medical colleagues, but also a wealth of technical skills calling for considerable dexterity and long application to reach perfection.

The performance of general practitioners as surgeons has been subjected to an ever-increasing critical analysis by surgical specialists during the past fifty years. In this regard, the general practitioners interested in surgery seem to have done a much more thorough job than their medical colleagues in the broad field of general practice, especially diagnosis and hospital organization. For example, with one exception, all general practitioners working with or testifying before the President's Commission were general-practitioner surgeons. Some were sent as delegates, and others were invited by the Commission, not because of surgical ability but because of their wide accomplishments.

The requirements for training and experience demanded by the various specialty boards offer an index to how the leaders in each of these fields assess the difficulties and skills to be mastered. For example, the demands for board qualifications in pediatrics and anesthesiology are encompassed in two years of residency training whereas five years are required for general surgery.

These theoretical and academic considerations, however laudable, must be equated to practical necessity. An endeavor to do this is made largely in terms of surgery, which is the most controversial area, since most of the considerations applying to it apply in some degree to all specialties. Because little room is left in the great cities for the general-practitioner specialists, consideration is given largely to rural, semirural and small-town communities.

It should be said at this juncture that much of the controversy centers on what is often referred to as "the rights and privileges" of the general practitioner, or alternatively "the rights and privileges" of the specialist, and there has grown up a regrettable competition for the preservation of these so-called "rights and privileges" — for example, between the members of the American Board of Surgery and the American Academy of General Practice, with the American College of Surgeons standing somewhere between. It might be pointed out that none of these bodies or their members are entitled to any "rights and privileges" that are not wholly synonymous with the "rights and privileges" of the people, to whom all consideration must be directed.

Need for General-Practitioner Surgeons

No one knowing the medical picture in rural America, appreciating the cultural demands of patients that "their doctor" do "their work," understanding the economics of medical care and the present impossibility of widely distributing specialists outside the big cities (except by actual direction and subsidy), could seriously challenge the real and great need for general-practitioner specialists, and perhaps more particularly for general-practitioner surgeons.

It is another thing to challenge the capabilities of many of the doctors who are the products of this need and to plan for their betterment or ultimate replacement. It has been estimated that between 40 and 70 per cent of all the surgery in the country is in the hands of general-practitioner surgeons; certainly, a great majority of the small hospitals (25 to 100 beds) are staffed almost entirely by general practitioners, and most of these are equipped with operating theaters. It is reasonable to assume that most of them need operating theaters, if for no other reason than to care for emergencies resulting from trauma, and unusual and catastrophic complications of childbirth. It is equally reasonable to assume that many of them must cope with acute abdominal and similar problems. When specialists are not available the general practitioner must serve.

The surgical purists claim that these problems can and should be solved by centralization of specialist services in the great hospitals and the maximum

use of modern means of transportation. A few selected cases, the common experience of so many doctors, suffice to refute this piece of "ideal" theory. Examples of these are head injuries resulting in compression, massive hemorrhage resulting from such conditions as perforation of the placenta, placenta praevia or trauma from a multitude of causes, respiratory obstruction demanding immediate tracheotomy and similar spontaneous emergencies, which do not permit the transportation of the patient. Occasionaly, the emergency is catastrophic enough to require intervention without sterile instruments.

Although such irrefutable emergencies constitute the *raison d'être* of the on-the-spot-surgeon, there are many other reasons for the continuing existence of the general-practitioner surgeon. First, if he is to be capable of meeting dire emergencies arising infrequently, he must have continuing surgical experience at a reasonable level, and in a great many places he must be prepared to meet the common acute surgical emergencies of the abdomen and certain aspects of obstetrics.

Any doctor so skilled is entitled to undertake elective operations within certain limits. In fact, if he does not do so he cannot possibly maintain his surgical skills. The important questions to be answered are, What are the broad limits of general-practitioner surgery and what relation does this have to training requirements?

It is possible to specify quite categorically the range of conditions that the general-practitioner surgeon commonly encounters and should be capable of handling safely and well. These problems are as follows:

Abdominal surgery. All acute abdominal emergencies, including intestinal defunctioning operations and simple resections, anastomoses and elective procedures to the same level.

Obstetrics. Classic and low cesarean section, midforceps extractions, exploration of the uterus and so forth.

Gynecology. Total and vaginal hysterectomy.

Peripheral vascular disease. Ligation and stripping of superficial veins, ligation and division of femoral veins and embolectomy (femoral, iliac and auxiliary iliac vessels).

Genitourinary conditions. Nephrectomy and cystostomy in emergencies.

Thoracic surgery. Thoracoabdominal incisions, resection of ribs, thoracic trauma and cardiac massage.

Neurosurgery. Elevation of fragments of compound fracture of skull and subtemporal decompression, *if ordered by* a neurosurgeon.

Otolaryngology. Tonsillectomy, myringodectomy and emergency tracheotomy.

Orthopedics. A definite list of simple fractures and dislocations. Compound fractures as *advised* by a specialist consultant.

Plastic surgery. Split, pin-point and small full-thickness grafts for treatment of burns and trauma and replacement of tissue about face and fingers after excision of small skin neoplasms.

This list should set the upper limits of the scope of general-practitioner surgery. Factors other than the doctor's personal skills, such as the limitations of hospital and nursing facilities, may reduce this scope considerably. No good case can be made out today for the general-practitioner surgeon grossly to exceed these limits and undertake surgery for such things as thyrotoxicosis or malignant condition demanding highly specialized training (except interim procedure like colostomy to relieve acute intestinal obstruction resulting from a neoplasm and a total hysterectomy for early cancer of the endometrium).

How to keep general-practitioner surgeons within reasonable limits poses a difficult problem. This cannot be done satisfactorily by legislation and policing. It must be a matter of self-determination, residency training and minimum control of hospital situations. The proper resolution by this means is contingent upon good organization. From a practical standpoint consultant "chief surgeons" associated with medical centers can do much to eliminate excesses and furnish guidance. The overcoming of financial incentive leading doctors along the road of surgical excess is one of the great problems of the future.

The relation of essential general-practitioner surgery to education and training raises a host of debatable issues. It will have been noted that, in terms of the functional definition of general practice here offered, all responsibility for major surgery has been removed from the shoulders of the general practitioner. It should be clearly understood that this is a target for a distant future and not a program for tomorrow. Many years will elapse before surgery can pass from the province of the general practitioner, even though there are admittedly too many qualified surgeons in process of training. A "new type" of general-practitioner surgeon produced by specific residency training would have to be accepted by the leaders in surgery, this change being realized, if ever, in the distant future. This does not mean that the difficulties of the interim period can be ignored.

These difficulties will not be solved satisfactorily by the current approach of setting rigidly high academic and technical standards, such as those set by the American boards, and projecting them into medical situations where busy doctors already doing satisfactory work cannot possibly aspire to meet such requirements. These really apply to urban areas, preparation for teachers of surgery, and so forth. Although the standard-setting efforts

of the various boards are wholly laudable at the top level, the present trend to use the same standards for the exclusion of the worthy and essential general-practitioner specialist from hospital appointments is deplored. It is agreed that certain *practical* standards must be set for residency training of general-practitioner surgeons without the padding of "research" and unnecessary months in the laboratory.

One important point that has not been mentioned is the relation of the volume of major surgical work a doctor, working alone and not receiving referred cases as distinct from one working in a group, must do to maintain his skills. This consideration introduces the more important question of the volume of work an efficient general practitioner can and should handle. There are several schools of thought on this issue. The majority of them have arrived at their various assessments of volume of work in relation to performance from very shaky premises and a confused understanding of the realities of general practice.

It is our opinion that the commonly accepted present-day assumption that a general practitioner is fully occupied caring for 1000 people is wide of the mark, and we are concerned at the endeavors being made to gear educational and medical organizational developments to this figure. We believe that a general practitioner with a well organized and equipped office, employing adequate nursing, technical and clerical assistants, can care adequately for approximately 2000 people. We further believe that a population group of about 5000 is necessary to provide the volume of clinical material that will maintain a general-practitioner surgeon's skill in the field of general surgery.

These issues cannot be further elaborated in this paper, but the statistics presented in Table 3 are offered without comment.

Table 3. *Crude Breakdown of 300 Continuous Days of Work in the Practice of One of Us* for the Year 1945.*

Total Services†	No. of Visits
Physician:	
Hospital visits	4,519
Office services	4,671
Home visits	798
Office laboratory procedures (x-ray examination and clinical and laboratory technician)	3,449
Confinements	36
Major surgical procedures	126
Minor surgical procedures:	
Hospital	47
Office	158
Tonsillectomies	63
School children (partial physical examination)	502
Nurse:	
Office services	1,560
Home visits	444
Total	16,373

*D. M. C. (working without the assistance of other physicians but with the help of a secretary, office nurse and technician).
†Consultations (500 to pathologists and roentgenologists and the remainder to specialists representing many fields) numbered 727.

The volume of this practice, when related to the gradually increasing number of office assistants, remained quite constant for about fifteen years and was judged to be conducted at a reasonably good level by several specialists who were familiar with it. This is not an isolated example; the average daily personal services by nurse and physician amounted to approximately 40.* Four factors must be present to permit this volume of work to approach an acceptable level: long hours of work (75 to 100 a week), at least 3 excellent office assistants, few home visits (4 by nurse and physician daily) and hundreds of trivial illnesses.

The level of surgical skill necessary for this type of practice (with excellent consultants available in all fields within an hour or two) was supplied before 1940 in teaching hospitals in the East by two years of straight surgical and six months of obstetric training.

The net result of such a practice is a chronically fatigued surgeon who may or may not be sufficiently alert to operate at his top level of efficiency. There were no fatal accidents that year, but occasionally errors were noted, more embarrassing than serious and usually caused by constant overpressure and lack of time.

Medical Education in Relation to General Practice

Medical curricula and hospital training programs have grown up in a haphazard fashion. Twenty or thirty years ago medical education in the better schools was more or less basic, if for no other reason than at that time the sum total of sound medical knowledge was basic. Since then all sorts of endeavors have been made to superimpose on the basic and essential the almost incredible scientific and technical advances of the last few decades.

The present-day medical student is expected to absorb an immense amount of detailed knowledge, much of which bears little relation to the work he is going to do. He is the victim of rapid technical and scientific progress and the natural enthusiasms of the scientists and educators to embrace and pass on these advances in knowledge.

Medical education has far outstripped the ability of doctors to use and apply widely in a practical way the knowledge and technic at their disposal. A dawning realization of this fact has added to the burdens of medical students. Confusion characterizes present-day thinking in this field.

Endeavors are being made to compensate for the great swing of the academic pendulum to scientific materialism by the addition, to an already overloaded curriculum, of superficial attempts to "humanize" the student, and to teach him "social" and "psychologic" medicine.

*An article entitled "Your Economic Weathervane" in the December, 1952, issue of *Medical Economics* (pages 83-87), indicated that approximately 23 per cent of all physicians in the United States were in this income bracket. These doctors saw an average of 40 or more patients daily.

The movement toward specialization and the almost total domination of medical faculties by specialists has greatly intensified these trends. Correction can only be brought about with a clear recognition of the real medical needs of the people and the regearing of educational machinery to meet these needs. More than anything else this calls for an objective understanding of the problems of general practice, a functional definition of the essential responsibilities of the general practitioner and the readjustment of educational theory and practice to cope with them.

This paper has endeavored to do the first two of these things; it cannot in any detail attempt the latter. We recognize completely the importance of training and its relations to subsequent medical performance; we appreciate the endeavors of the various specialty groups to establish and promote standards within the confines of the numerous specialties, but we deprecate the over-all trends in relation to the needs of the people, and the needs of the vast majority of doctors who are to serve them.

So far as general practice is concerned theoretical requirements of the present-day medical course go well beyond the requirements of the doctor in practice. This, of itself, would be no crime so long as these theoretical excesses were not carried on at the price of practical essentials, which would promote the general level of medical care in the community. It is suggested that this is the price being paid for some of the great "advances" in medical education.

The enormous developments in hospital practice have elevated the larger of these institutions, particularly the teaching hospitals, to a plane so far above that of community practice that the gap is difficult to bridge, but with great effort (which is far from universal) and by strict adherence to a basic pattern of consultants, physical plant, laboratory facilities and moderate hospital control of qualifications for staff membership (particularly the surgical staff), the present gap could be bridged. To try to eliminate the hiatus by the inclusion of short "orientation" courses in the ways of general practice or by harnessing of the resources of health departments, programs for the medical care of indigents, hospital and outpatient departments, screening clinics and so forth is both inadequate and artificial. The use of such unsatisfactory impersonal substitutes for what should be a personal medical service is no solution, and yet this is the common trend.

We believe that the answer to the educational dilemma lies, first with an understanding of the problems as set out above, and secondly with the harnessing of the huge clinical and teaching resources outside existing teaching hospitals. We do not agree with the readoption of long-discarded technics of preceptorship, which some authorities are again advocating, but suggest rather that tried and tested methods of internship and residency training can be applied in a much more realistic manner and extended to embrace smaller hospitals of satisfactory standard. These hospitals today house the greatest part of the less exotic but absolutely necessary clinical teaching material. To accomplish this, general practitioners and specialists in rural and semirural areas would be expected to give instruction under the auspices of the teaching hospitals after the problem and the method had been carefully studied.

We further believe that it is possible and necessary to develop a new teaching medium outside the hospitals. This should take the form of properly organized group practice, serving community needs to a much higher level than is usually possible for the individual practitioner working alone in his office.

The province of teaching must pass from the monopolistic control of the specialist and make full use of the great contribution that the general practitioners have to offer, when they have shown that, as a group, they are capable and desirous of accepting this great responsibility.

None of these statements in any way imply a turning back of the clock so far as the standards and qualifications of specialists are concerned, but rather a realistic and common-sense turning forward of the clock in terms of standard setting for general practice. This includes, however, an appeal to stop decrying the achievements of general practice in terms of the rightfully exalted, highly particularized requirements for individual specialist fields and to stop trying to set the educational course for the former with the compass of the latter.

It is not possible to discuss in detail the question of curriculum content, but we are firmly of the opinion that a well planned four years of medical education, followed by two years of hospital training, where teaching is properly conducted, will meet the needs of a high level of general practice anywhere. The one exception to this generalization is surgical technic, which calls for a third or fourth year of hospital experience devoted specifically to this end, with perhaps orientation in this direction in the early years of hospital training.*

It is emphasized that the financially handicapped make up a large percentage of students who enter this field. The expense of three or four years of internship and residency program may be prohibitive. Direct subsidies in the form of loans, internships during the fourth year of medical school and other suggestions have been made to fit the difficult economic situation to the absolute necessity of longer hospital training for qualified general practitioners and general-practitioner surgeons.

Postgraduate or "continuing" education is a necessity of good general practice. The word "continuing" should forever be replaced by the word

*One of us (D.M.C.) believes that three years of hospital training are necessary to qualify a general practitioner and four years of hospital training, with three of these devoted to surgery, are necessary to qualify a doctor as a general-practitioner surgeon.

"continuous." The key to continuous education is the daily constant and close interaction of doctor with doctor that today is difficult for most men working in individual practice and impossible for those in this position with no hospital appointments. The value of formally planned postgraduate courses is secondary to that of providing the means for this constant and close interaction.

As a matter of fact, if the residency training for general practice by means of medical journals, hospital meetings and the meetings of county and state medical societies were adequate and young doctors could and would pursue "continuous" education locally, most of the postgraduate courses now offered would be redundant. This is not true of the preparation for part or total specialization (preparing for the American Board of Medicine and so forth), which requires weeks or months of postgraduate work, year after year.

Why is it almost impossible to persuade the majority of general practitioners to use the excellent postgraduate facilities that may be at their disposal? In addition to all the factors mentioned (time, low income and lack of hospital facilities), it is a cold fact that, unlike the specialist, the general practitioner can afford to practice at a substandard level without greatly jeopardizing his hospital appointment, his income or his membership in medical organizations available to him. We do not regard the one-year internship and the program of postgraduate study required by the American College of General Practice as fully meeting the situation. The expulsion from the Academy of General Practice of over 100 physicians in California because they did not meet the required postgraduate study emphasizes the lack of incentive under the present program.

If hospitals demanded qualifications for staff appointments for general practitioners more in line with necessities of practice, if boards of general practice were established to be taken three to six years after completion of residencies, and if admission to the Academy of General Practice required the foregoing qualifications for membership, perhaps the general practitioner of the future would have the same incentive that is common to all the specialist fields and a worldwide pattern.* This is mentioned as a partial solution even though some of the less desirable features of the board requirements are appreciated.

Finally, it must be said that educational reform is far from the panacea of all evils in the circumstances of general practice today. Important as it is, it may be secondary to the requirements for social, economic and organizational reform in relation to this field.

*This conception of three-year residency programs and American Board of General Practice qualifications is not countenanced by one of us (J. C.), who believes that for many reasons not more than 5 or 10 per cent of general practitioners could or would accept such a program.

MEDICAL INTELLIGENCE

AUTOGENOUS CARBON DIOXIDE FOR THE RELIEF OF SYMPTOMS SUGGESTING CEREBRAL ANGIOSPASM

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PATIENTS with hypertension and patients with cerebral arteriosclerosis frequently suffer from recurrent, transient episodes of dizziness, weakness of an extremity or aphasia that suggest focal cerebral anoxemia. The ephemeral nature of many of the attacks and the absence of residual signs or symptoms have been attributed in the past to cerebrovascular spasm. In recent years this explanation has been challenged[1] on the grounds that cerebral vessels are not structurally adapted for marked constriction; that cervical sympathetic stimulation constricts pial vessels infinitely less than those of the skin[2]; and that this unproved functional mechanism need not be postulated to explain phenomena that can be equally accounted for by proved organic obstructive mechanisms such as embolism. This hypothesis is less convincing as an explanation for recurrent transient symptoms due presumably to anoxemia of the same area of the brain with complete recovery between attacks. Denny-Brown[3] has reported cases with proved chronic stenosis of the carotid artery, and Kubik and Adams[4] describe similar patients with acute occlusion of the basilar artery who suffered from repeated episodes of symptoms attributable to recurrent cerebral ischemia. An editorial[5] summarizing these conflicting views offers an ingenious theory to reconcile them:

> For if it is true that a transient syndrome may be the result of organic closure followed by more or less rapid rescue by the collateral vessels, it is not inconceivable that repeated attacks might be produced by subsequent fluctuations in the adequacy of collateral blood supply. Such an explanation at least has the virtue of invoking only known mechanisms. For while there is no evidence that spasm can occur in any but the most abnormal circumstances, it is well known that the cerebral vessels maintain a normal modest tonus beyond which they can be widely dilated. The stimuli best known to effect such dilatation are anoxemia and excess of carbon dioxide. Such an explanation then involves an alternation between dilatation and normal tone on the part of collateral vessels with consequent waxing and waning of blood supply to the infarcted area.

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This is not so far removed from the obsolete notion of cerebrovascular spasm as far as practical therapeutics are concerned. It makes little difference to the patient whether one relaxes the spasm of the vessel causing the ischemia or relaxes the normal tone of the collateral vessels that will compensate for the occluded artery. The problem is to find a reliable dilator of cerebral arteries that will not cause a drop in intracranial blood pressure as the result of generalized vasodilatation such as is produced by nitroglycerin. This therapeutic agent should be easy to obtain, convenient to take and rapid in action. Papaverine, suggested by Russek and Zohman,[6] must be given several times a day over long asymptomatic intervals to be available when actually needed and in my limited experience has been disappointing. Carbon dioxide, suggested by Denny–Brown[3] on the basis of Schmidt's[7] studies, is probably the most effective and prompt dilator of cerebral arteries, but a cylinder of six per cent carbon dioxide is not likely to be available to an ambulatory patient whose unpredictable symptoms may last only a few minutes. However, his expired air contains almost as high a concentration of carbon dioxide and rebreathing into a medium-sized paper bag should have much the same effect as inhalation from a tank. This procedure was carried out successfully on 9 patients whose recurrent symptoms suggested episodes of transient cerebral ischemia. The assumed nature of the disorder and the rationale of the therapy were explained to each patient, and each was given a "dress rehearsal" with a paper bag so that the simple mechanics would be understood. A snug fit over the nose and mouth was assured by conspicuous inflation and deflation of the bag. Each patient was then instructed to carry a paper bag in pocket or handbag at all times and to have one within easy reach in bedroom and downstairs living room. Therapy was instituted at the first suggestion of the patient's characteristic symptom. At times I happened to be present for the therapeutic trial, but, since most of the symptoms were subjective, I was usually forced to depend on the patient's testimony for evaluation. Five to ten forced breaths, which required fifteen to thirty seconds, were sufficient to relieve the symptoms, which would otherwise persist for minutes or hours. More prolonged therapy was no more effective and entailed the hazard of anoxia. The patients soon found the number of breaths required to alleviate their symptoms and then discontinued the procedure. In only 2 cases did the symptoms recur soon after the rebreathing had been stopped, although the patients usually had recurrences days or weeks later that again responded to carbon dioxide.

This group of 9 patients consisted of 4 men and 5 women whose symptoms varied in duration from days to years. Six of them were septuagenarians, 2 were in the sixties, and 1 was 53; the last, however, was vascularly at least a decade older by reason of hypertension and severe, long-standing diabetes. Four of the 9 patients had hypertension, but there was no correlation between this and the presenting symptoms. Three patients complained of recurring episodes of giddiness, weakness and blurred vision. All responded promptly to rebreathing into a paper bag, as did a patient who complained of episodes of giddiness only. The diabetic patient, who had had one attack of aphasia lasting an hour, complained of recurring episodes of giddiness, accompanied by paresthesia of both hands, that were not due to insulin reactions. Both symptoms responded promptly to autogenous carbon dioxide. Two patients who suffered from deafness and tinnitus and recurrent attacks of vertigo could terminate the vertigo promptly by rebreathing into a paper bag; the tinnitus and deafness were unaffected. A hypertensive patient, whose pernicious anemia was fairly well controlled by liver extract, complained of episodes of blurred vision that could be relieved by thirty seconds of rebreathing into a paper bag. In contrast to the other 3 patients with blurred vision, her symptoms recurred five to ten minutes after the paper bag had been used but continued to be amenable to retreatment. A seventy-four-year-old normotensive man, with a two-year history of episodes of giddiness, experienced sudden syncope for a few minutes followed by weakness of the left facial muscles and arm. Two days later the only residual neurological findings were clumsiness of the left hand on attempts at fine manipulation. This clumsiness was promptly relieved by rebreathing into a paper bag but recurred in an hour or two. This so intrigued the patient that he kept himself happily occupied for some days with his paper bag. In this case the objective evidence of response to carbon dioxide was quite impressive. After about eight days the clumsiness of the left hand had markedly diminished, but the residual symptoms no longer responded to rebreathing.

Four other patients in this age group who presented similar symptoms failed to respond to this procedure. A hypertensive, sixty-six-year-old woman who had recovered from a left hemiplegia six months previously awoke with weakness and paresthesia of the right hand. No benefit was obtained from paper-bag rebreathing, and a spastic paralysis of the entire right upper extremity developed in the course of a few hours. It is probable that she was having a frank cerebral thrombosis too extensive for relief by collateral circulation, however induced, or that her collateral vessels were too sclerosed to respond to a vasodilator.

A seventy-nine-year-old man with extensive combined system disease due to pernicious anemia that

had responded poorly to vitamin B_{12} began to have frequent attacks of weakness, giddiness and blurred vision accompanied by increased paresthesia of the legs. Paper bag rebreathing was of no benefit, but the symptoms always diminished with recumbency. He may have been having the "little strokes" about which Alvarez has written so convincingly. It is possible that his patent collateral cerebral vessels were too sclerotic for dilatation and that gravity had to be invoked to improve his cerebral blood flow.

A moderately deaf sixty-five-year-old man with occasional tinnitus began to experience episodes of true vertigo, which were increased by lateral movements of the head. There was no benefit from carbon dioxide but complete relief from Dramamine. His symptoms may have been due to a true labyrinthitis in contrast to the other 2 patients whose vertigo was probably on an anoxemic basis since it responded to rebreathing.

A sixty-two-year-old woman began to complain of recurrent attacks of sudden "weakness from the waist down" so that she felt as if she could not move her legs. No motor or sensory abnormality could be demonstrated during an attack, and no coincidental systemic disease was found. Hysteria was suspected because of various domestic tensions, but the possibility of transient cerebral ischemia had to be considered. She obtained no relief from paper-bag rebreathing, but the symptoms always subsided in a few hours if she lay down and rested. One might speculate whether recumbency improved her cerebral blood supply or merely benefited her psyche.

The prompt and unequivocal response of the 9 patients described raises the suspicion that autogenous carbon dioxide administered by rebreathing into a paper bag for fifteen to thirty seconds may alleviate recurrent episodes of focal cerebral anoxemia. Whether this is accomplished by relaxation of the spasm of the vessel at fault or by relaxation of the normal tonus of vessels capable of establishing collateral circulation is largely of academic interest as far as the clinician is concerned.

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BY THE LONDON POST

London Fogs, Midwifery, Oxford Institute, Medical Progress

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A successful writer once told me that he was able to write at his best in the middle of a London fog. He assured me that this was the time when afferent impulses were reduced to a minimum and when one should be capable of the most concentrated thought. If the theory is valid, this should be a good letter, for I am writing it on the fourth day of one of the worst London fogs on record. Road transport has been brought to a standstill, pedestrians are groping their way with sticks and torches, and the London underground (subway) services are more than ever like the proverbial sardine tins.

Medically, this particular fog has been of interest. Already there have been 200 cases of sudden death attributed to the fog. In nearly all cases the patients have been over sixty, and the cause of death has been an acute fulminating bronchitis or bronchopneumonia. In addition, hundreds of patients with pneumonia have been admitted to hospitals, and every oxygen tent in London has been in use. This devastating effect of the weather has not even been confined to the human population of London: the fog came down just when one of the largest agricultural shows was being held, and 11 prize cattle also died from acute pulmonary disease.

* * *

The Royal College of Midwives has recently been celebrating the golden jubilee of the passing of the Midwives Act of 1902. Until the passing of this act the practice of midwifery in this country had been somewhat unsatisfactory.

At one time, the licensing and control of midwives was in the hands of the Church, and bishops or their representatives issued licenses to persons who were likely to arrange for the proper baptism of the newborn baby. The power of the Church in this matter was, however, abolished in the seventeenth century, when the Surgeons' Hall introduced a system of examination and licensing.

In the eighteenth century a number of medically trained obstetricians gained fame, and lying-in hospitals were opened. At the same time the control over the women who practiced much of the domiciliary midwifery was relaxed, and in Victorian days the majority of Britain's babies were being delivered by women who were largely unsupervised and untrained. Attempts at reform were unsuccessful; in a leading article, the *British Medical Journal* has suggested that the calls of the reformers were

stifled by Victorian prudery, which forbade any rational public discussion of an indelicate subject and which ordained that in conversation pregnancy should be relegated to the mysteries of an "interesting condition."

Nevertheless, in 1902, the first Midwives Act was passed, and in December of that year the Central Midwives Board, which was set up under a provision of the Act, held its first meeting. The Board had a difficult task. It was given powers to restrict the practice of midwifery, to maintain a register of certified midwives and to prohibit the use of the title by uncertified women. It had to admit to its register any who had been in regular practice for a year, but quickly set to work to raise the standard of training of new recruits.

The board was charged with the responsibility of setting standards of training, conducting examinations, publishing annually a roll of certified midwives and exerting disciplinary control.

In the fifty years that have elapsed since the board was set up there have been notable advances in midwifery; in particular the infant mortality has fallen from about 4 per 1000 total births at the beginning of the century to 0.65 per 1000 in 1951. Although it is clear that this improvement is largely due to the scientific discoveries of the last twenty years, there is no doubt that the improved training of midwives has been of great importance.

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The late Sir John Ryle had already held the important appointments of consultant physician at Guy's Hospital and Regius Professor of Medicine at Cambridge, when in 1942 he became the first director of the Institute of Social Medicine at Oxford. The purpose of the Institute was to determine the influence of social, genetic and environmental factors on the incidence of human disease and disability.

The Institute had not reached full maturity when Ryle died, and the announcement that it is to be brought to an end and the work carried on by a reader has been received with regret. The curtailment is chiefly for financial reasons, and Sir Ernest Rock Carling, in the last report (published by Oxford in 1952), insists that the venture must not be regarded as a failure. Other universities have followed the example of Oxford and opened departments of social medicine, and several surveys carried out by the institute have yielded useful information. In particular the "combined survey" has proved a profitable means of investigation. By this method, outside workers such as medical officers of health, school doctors, health visitors, midwives and factory doctors have collaborated with the staff of the Institute. Research on the incidence of tuberculosis in various industries, the causes of absenteeism and the influence of housing conditions on predisposition to disease has been carried out.

Self-contained surveys have also been undertaken. These entail the repeated examination of the same persons; considerable work on student and child health has been carried out on these lines.

It is perhaps a happy chance that, almost coincidentally with the announcement that the Institute at Oxford was to end, a new health center was opened in Nottingham and named the John Ryle Health Center. There is no doubt that Ryle's name will be forever associated with social medicine in this country, and it is hoped that many of the ideas that he inspired will be followed up in both Oxford and other centers.

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The Hunterian Society recently debated a motion "that the continued advance in medicine will produce more problems than it solves." Speakers for the motion pointed out that the lengthening of life and eradication of disease were bound to lead to an increase in world population, with inevitable social and educational problems. Speakers against the motion argued that such a defeatist attitude was against the best traditions of medical science, but the meeting must have been in a cynical mood, for the motion was carried by a small majority. The result should probably not be taken too seriously, for it was certainly a case in which good humor defeated good sense. It is perhaps doubtful whether Hunter himself would have been amused, for rarely has there been anyone so intent on making advances in medicine. He would have been more heartened to hear Lord Webb-Johnson (former president of the Royal College of Surgeons) make a recent speech in the House of Lords against an attack by the anti-vivisectionists, who were suggesting that present safeguards against cruelty in animal experiments were inadequate. Lord Webb-Johnson denied this and said that one must not shrink from doing an experiment that may cause pain any more than a worker shrinks from experimenting on himself. He recalled how as a young man he had tested different types of catgut by putting 69 stitches in the front of his thigh and watching to see how long each type took to be absorbed. He reminded the House of the way in which many advances had resulted from the personal heroism of experimenters. As an example he cited Pasteur's courage in sucking the saliva from the mouth of a mad dog to be sure he took the virus of rabies. He also paid tribute to the heroes of the United States Army on the Panama Canal who slept in huts with discarded clothing from those who had died of yellow fever. Such a spirit as theirs is more in line with the Hunterian tradition.

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Weekly Clinicopathological Exercises

FOUNDED BY RICHARD C. CABOT

BENJAMIN CASTLEMAN, M.D., *Editor*

VIRGINIA W. TOWNE, *Assistant Editor*

CASE 39051

PRESENTATION OF CASE

A seventy-six-year-old man was referred to the hospital for study.

Three months before entry the patient noted gradually increasing shortness of breath, first recognized when he was unable to swim as far as previously. This symptom became more marked until during the month before admission he was unable to walk one city block without becoming "winded." During the three months he also had a slightly productive, annoying cough, aggravated six weeks before admission by a cold. At first it felt like a "tickle" in the throat; later it became productive of small amounts of yellowish sputum. On three or four occasions he coughed up pink, frothy fluid, but did not associate these symptoms with unusual dyspnea or chest pain. For the six weeks before entry he had difficulty retaining ingested food. After a meal he felt a "lump" in the epigastrium, experienced gas pains, and at times nausea with some vomiting. He voluntarily restricted his diet to cereals, soft-boiled eggs and fluids; however, symptoms persisted.

The past history was noncontributory except for a perineal prostatectomy three years before admission because of difficulty in urination. He had lost 33 pounds of weight during the six months prior to entry.

Physical examination revealed a well developed, thin, chronically, but not acutely, ill man lying flat in bed having some shortness of breath as evidenced by shallow breathing. The skin was normal; there were no enlarged lymph nodes. The thyroid gland was firm but not enlarged. The neck veins pulsated, and there was a marked "paradoxical" pulsation as measured with the blood-pressure cuff. There were slight dullness, diminished breath sounds and vocal fremitus in the left lower posterior part of the chest. The left border of the heart was 10 cm. to the left of the midsternal line. There was a normal sinus rhythm. A scratchy to-and-fro friction rub was best heard along the lower sternal margin in the supine position. The tip of the spleen was just palpable. The liver edge was felt three fingerbreadths below the costal margin; it was smooth and slightly tender. There was ++ edema of the dorsum of the feet but no edema of the ankles.

The temperature was 98°F., the pulse 80, and the respirations 25. The blood pressure was 120 systolic, 80 diastolic.

The urine had a specific gravity of 1.035 and gave a + test for albumin; the sediment was loaded with amorphous material. Examination of the blood revealed a hemoglobin of 14.2 gm. and a white-cell count of 11,900, with 87 per cent neutrophils, 11 per cent lymphocytes and 2 per cent monocytes.

FIGURE 1.

The nonprotein nitrogen was 35 mg. per 100 cc.; the sodium was 139.9 milliequiv., the chloride 96 milliequiv., and the carbon dioxide 24.0 milliequiv. per liter. The prothrombin time was 16 seconds (normal, 13 seconds), or 63 per cent. An electrocardiogram showed a normal rhythm, with occasional ectopic ventricular premature beats at a rate of 110. There was slight right-axis deviation. The T waves were low in Lead 1 and slightly inverted in Leads 2 and 3; the P waves and the PR interval were normal. The precordial leads demonstrated upright R waves, with a normal sequence across the chest, and upright T waves. A roentgenogram of the chest disclosed a mass measuring 12 cm. in diameter that was inseparable from the left posterior aspect of the heart (Fig. 1); this appeared nodular and somewhat irregular in contour and gave no evidence of pulsa-

tion. The heart border in this region was obscured, and the left leaf of the diaphragm was fixed. Both hilar shadows appeared more prominent than usual, but it was impossible to distinguish with certainty enlarged lymph nodes in the hili. Lying at the right tracheobronchial angle was a large soft-tissue mass about 5 cm. in diameter that had the appearance of an enlarged lymph node. The peripheral lung fields were grossly clear. No definite bone destruction was seen. Barium-swallow examination revealed that the esophagus was widened down to a point just below the level of the aortic arch, where the esophagus showed a fusiform string-like narrowing consistent with extrinsic constriction. The esophagus

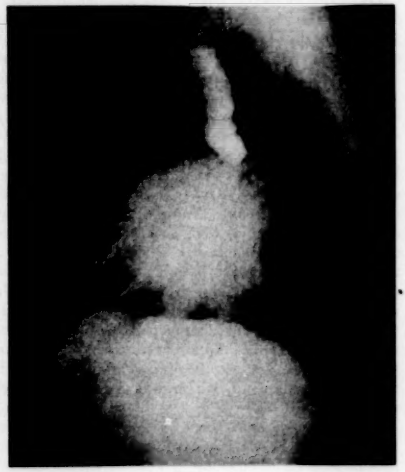

FIGURE 2.

appeared displaced posteriorly in relation to the carina, which lay more anteriorly at this level, suggesting a mass between the two (Fig. 2).

In the hospital the patient became progressively weaker. On the fourth hospital day a loud, harsh to-and-fro swish could be best heard along the left sternal border from the second to fourth intercostal spaces. Over the left apex there were hardly any breath sounds, but many fine inspiratory crackles were present. The temperature was normal; the pulse was 95, and the respirations 20. The blood pressure was 90 systolic, 68 diastolic.

Three days later an operation was performed.

DIFFERENTIAL DIAGNOSIS

DR. HOWARD B. SPRAGUE*: I do not want to be thought unsporting in wondering what the final outcome of this case was. I do not know whether I should be told how successful the operation was or whether the patient survived. I shall, therefore, have to take this story as it stands.

This was a relatively acute onset in a healthy old man who began to have trouble only because he could not swim as far as he had formerly been able to swim. I do not know whether he was a smoker or not. He had cough with dyspnea, at first only on severe exertion, with frothy, pink expectoration somewhat later. There was some obstruction to swallowing because of a mass in the chest. He had had a prostatectomy three years before admission. He had lost weight but was not anemic. There was no cyanosis. It was noted that he had a firm but not enlarged thyroid gland; I do not know whether this was put in to help me or not. There were pulsating veins and a paradoxical pulse, which by definition suggests that he had some pericardial difficulty. This is helped by the finding of a scratchy to-and-fro rub in the lower sternal margin. There were no murmurs. There was edema of the feet. He had no tachycardia and no important arrhythmia — just a few premature beats — and a slight right-axis deviation in the electrocardiogram.

Now, I come to the mass in the chest, which I should like to have the radiologist tell me about.

DR. STANLEY M. WYMAN: The enlargement of what grossly appears to be the cardiac shadow is seen in the posteroanterior view (Fig. 1). However, the upper lateral portion of this shadow is nodular and irregular; in the lateral view one can see a large mass lying in the region of the left lower lobe that is inseparable from the heart shadow and obscures its margin (Fig. 2). This is the enlarged lymph node in the right tracheobronchial angle. The esophagus filled with barium is displaced posteriorly in relation to the carina as if something lay between the two.

DR. SPRAGUE: No fluid at the base?

DR. WYMAN: There is no appreciable fluid in the pleural spaces. This patient was very hard to fluoroscope well because he was so sick, but as nearly as one can tell, the right border of the heart pulsated quite well.

DR. SPRAGUE: We have heard that this harsh swish developed immediately before the operation. I assume, since there are no other particular leads, that the operation was performed on the chest. I should judge that if this was a thoracotomy, it was not believed that this man had metastatic cancer.

So far as the underlying disease is concerned, he seems to have had no chronic heart disease but a relatively acute difficulty arising from some proc-

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ess in the chest close to the heart — apparently, a part of the heart on the left side. It seems to me that it was not a process that had begun in the heart but one that had come from the chest to the heart.

I have to think of a primary tumor of the heart at this age; however, we ought to think of it rather more in young people; it can occur at all ages. I was interested to find that the incidence of primary tumor of the heart in 480,331 post-mortem examinations was 0.0017 per cent.[1] If such a case has been saved for me, I appreciate the confidence that is shown in me. Primary tumor of the heart is more likely to be intracavitary in its demonstration such as myxoma, sarcoma or other neoplasms that involve the chambers of the heart, although it can involve chiefly the myocardium. It does not seem to me that one would expect this deformation of the heart shadow if it were a diffuse process caused by a primary tumor although it might have been localized only in this area. Incidentally, the diagnosis of primary tumor of the heart has been made ante mortem in only 4 cases, according to the literature.[2]

A primary tumor of the pericardium also exists although it is more likely to manifest itself on the right side than on the left. The first case of primary cavernous hemangioma of the pericardium with a successful surgical removal appeared two years ago in the literature[3]; it occurred in an eight-year-old girl.*

Metastatic tumors are vastly more common, and carcinoma of the lung and of the breast account for almost half of them. I noted that the Harvard Cancer Commission, in 4375 autopsies on patients who died of cancer, showed 146 with a metastasis to the myocardium.[5] In 1 case the metastasis was from the prostate and in 1 from the thyroid gland — two suggestions about a possible source of metastatic disease in the case under discussion. The patient had no cardiac arrhythmia, tachycardia or block, all of which have been characteristic of metastatic tumor involvement of the myocardium in general. But it is true that extensive metastases — a remarkable replacement of cardiac tissue with tumor — can occur in the heart without cardiac failure. I might also think of extension of tumor arising in the lung, of direct extension of tumor metastases in the lung that then invaded the heart, or of a mediastinal sarcoma that had invaded the heart, all of which have been reported.

I must confess that I am somewhat influenced by a case that I discussed at a clinicopathological conference in Buenos Aires last September in which the carcinoma arose in the bronchus, eroded the left auricle and perforated thence to the esophagus through a necrotic fistulous tract as the final episode. The patient under discussion here did have trouble in the left side of the heart and pressure on the esophagus. On a statistical basis, I had favored a tumor arising in the lung that then invaded the heart and involved the pericardium, producing some degree of pericardial constriction. I suppose statistically that is still the best bet, although after looking at the x-ray films I am not sure whether the reverse process might be true — that there was a primary tumor of the heart that involved the mediastinum.

DR. JACOB LERMAN: Would you consider lymphoma?

DR. SPRAGUE: I should have mentioned it. Lymphoma is fairly common; actually, in the Harvard series of 146 cases, 18 were lymphomas.[5]

DR. BENJAMIN CASTLEMAN: This patient was sent to Dr. Williams with a diagnosis of scleroderma heart disease.

DR. CONGER WILLIAMS: That was one of several diagnoses that had been suggested. Apparently, at another hospital the diagnosis of carcinoma had been considered, but abandoned, and the patient was sent here with the clinical diagnosis of myocardial failure. One thing that should be mentioned is that the friction rub had been heard for some time before admission — perhaps three weeks. I did not hear it on the first day; I believe Dr. Yang Wang did. I heard it on the second or third day, when it was obvious. It was a variable friction rub that had been present a long time. That is what conveyed the original idea that there was a myocarditis with pericardial involvement, but it seemed that this patient must have had pericardial tamponade. He also had difficulty in swallowing. We agreed with Dr. Sprague that this must represent tumor, at least involving the pericardium, with or without tamponade. Apparently, there was tumor involvement in another region to explain the difficulty in swallowing, which was a serious matter in this patient.

The question has been asked several times, Why operate on a patient thought to have tumor, presumably an extension? There were two reasons for that: it was obvious that increasing tamponade, which would end in death if not relieved, was developing, and since we have had good luck in relieving tumor tamponade by surgical procedure, it was thought that a thoracotomy was warranted; also, since the primary site of tumor was unknown, there was a good possibility that it was a lymphoma or some other radiosensitive tumor, and a thoracotomy for biopsy was therefore warranted. We did not believe that this man could withstand additional preoperative procedures; consequently, bronchoscopy, esophagoscopy and so on were eliminated.

CLINICAL DIAGNOSIS

Tumor, probably bronchogenic, involving pericardium, with cardiac tamponade.

*The first and only report of the surgical removal of a primary tumor of the heart was that made by Beck[4] in 1942.

Dr. Howard B. Sprague's Diagnosis

Primary carcinoma of lung, with extension to pericardium, hemopericardium and possible involvement of left side of heart.

Anatomical Diagnosis

Carcinoma, oat-cell type, of left lower lung, with extension to pericardium and left auricle, with metastases to mediastinal, azygos and cardiac lymph nodes, and with erosion of esophagus.

Pathological Discussion

Dr. Castleman: At the operation Dr. Lamar Soutter made a window into the pericardium, which was adherent to the pleura, and found a large amount of hemorrhagic fluid and what he believed was a tumor involving the left lower lobe adherent to the parietal pericardium. Biopsy showed that this was an oat-cell carcinoma of the lung.

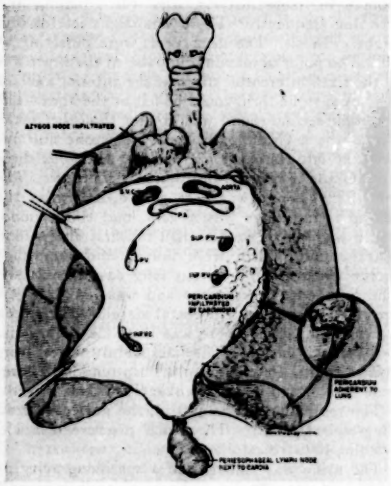

Figure 3.

The patient died a few days later, and autopsy demonstrated the marked extent of the tumor. The heart itself was not enlarged; although it weighed over 400 gm., the increase was due to tumor that involved the epicardium. After the heart was removed, and the parietal pericardium laid open, tumor was found involving practically the entire left lower lobe; it was adherent to the parietal pericardium, invaded the epicardium of the left auricle, extended into the left auricular wall, which was the only chamber of the heart itself that was involved, and also extended into the pulmonary veins on the left side, where it produced block (Fig. 3). It is interesting that there was a large cancerous azygos lymph node on the opposite side as well as large numbers of nodes in the mediastinum. In the next slide (Fig. 4), showing the lungs from behind, the tumor is seen on the left involving the bronchus. The mediastinal lymph nodes were involved, some of them having ulcerated into the esophagus and produced the obstruction. The posterior view of the aorta reveals tumor markedly adherent to the adventitia of the aorta. It is interesting that the tumor, although it was rapidly growing, apparently remained within the chest except for one metastasis to a lymph node at the cardiac orifice — the node that is so often involved with cancer of the esophagus. There were no other involved lymph nodes in the abdomen. I note in the record that the patient did not smoke or drink; that might be in line with the idea that it is the squamous-cell, not the oat-cell, carcinoma that may be related to smoking.

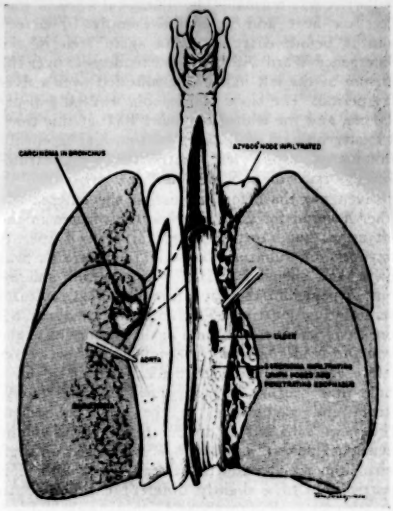

Figure 4.

Dr. Warren Point: Why was the spleen enlarged? It was palpable on examination.

Dr. Castleman: It was not enlarged; it weighed 300 gm. A spleen that size could not be felt unless

it was pushed down by the mass of tumor on the left side.

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CASE 39052

Presentation of Case

A thirty-five-year-old woman was admitted to the hospital because of abdominal pain of eighteen days' duration.

Twenty months before admission she had been seen in the Emergency Ward because of a painful tender swelling over the left hypothenar eminence, with a lymphangitic red streak extending to the antecubital fossa. An x-ray film of the left hand and wrist was normal. The illness subsided in four days on heat and penicillin therapy. Fourteen months before entry she was again seen in the Emergency Ward with pain and tenderness over the dorsum of the left hand that subsided over a five-day period. The blood hemoglobin was 9.0 gm. per 100 cc., and the white-cell count 4000 at this time. A roentgenogram of the chest was normal except for prominence of the left ventricle, with a cardiothoracic ratio of 13.5:28.5 cm.

Seven months before admission she entered another hospital for six weeks because of pain in the left upper quadrant, diagnosed as perisplenitis. A diagnosis of subacute bacterial endocarditis was made, and she was treated with digitalis and intensive penicillin therapy although blood cultures were always negative. Two and a half months before entry she was seen here again because of vague pain and tenderness over the right wrist. Six weeks before admission she was at another hospital for a short time because of paroxysmal auricular tachycardia and vague pain in the upper abdomen. The pain subsided after the termination of the menstrual period, and she was discharged on digitalis. She was readmitted after a week with epigastric pain of a slightly different character. An intravenous pyelogram showed a ptotic right kidney, with slight hydronephrosis. There was good concentration of the dye.

One month before admission she was again seen in the Emergency Ward because of a sudden onset of sharp epigastric pain with nausea. The blood pressure was 140 systolic, 40 to 0 diastolic, and the left border of the heart was 2 cm. to the left of the midclavicular line in the sixth intercostal space. There was a systolic thrill, a Grade 5 systolic murmur and a mid-diastolic Grade 2 rumble at the apex. There was a diastolic murmur over the aortic area. The hemoglobin was 9 gm. per 100 cc.; the urine gave a ++++ test for albumin.

Three weeks later she returned with the same complaint, but the pain was intermittent, occurring at fifteen-minute intervals and lasting about ten minutes. There was no change except for the presence of a pulsating, slightly tender right-upper-quadrant mass, ++ sacral edema and palmar erythema.

On admission she stated that the epigastric pain had gradually become worse in the last five days, with occasional radiation to the back. There was no relation to breathing, and the pain was usually more severe in the right upper quadrant, although frequently over the entire upper abdomen. She had vomited four times in the last five days.

Physical examination revealed an alert, thin woman in acute distress, who was groaning and writhing frequently. There was slight icterus and slight cyanosis. The neck veins were pulsating at 90°. The point of maximal impulse of the heart was in the sixth intercostal space at the anterior axillary line. A systolic thrill could be felt at the apex. The pulmonic second sound was greater than the aortic. There was a Grade 3 to 4 early diastolic murmur over the left sternal border, and at the apex there were Grade 3 systolic and diastolic murmurs. The mitral first sound was accentuated, and after the second sound there was a very loud third sound, which was clearly louder than the first and second mitral sounds. There were dullness and diminished tactile fremitus at the right lung base posteriorly. The liver edge was tender and was felt 4 finger-breadths below the right costal margin. The spleen was not palpable. There was + ankle edema and ++ sacral edema. The peripheral pulses were "pistol shot" in character. Deep-tendon reflexes were active, and bilateral ankle clonus was present.

The temperature was 100°F., the pulse 108, and the respirations 20. The blood pressure was 135 systolic, 40 to 0 diastolic.

The urine was amber, had a specific gravity of 1.028 and gave a ++++ test for albumin and negative tests for sugar and bile; the sediment contained a rare red cell and 2 or 3 white cells per high-power field. Examination of the blood revealed a hemoglobin of 8.5 gm. and a white-cell count of 16,600, with 76 per cent neutrophils. There were 3.5 per cent reticulocytes. The serum amylase was 41 units, the nonprotein nitrogen 130 mg., the serum bilirubin 2.1 mg. direct and 3.5 mg. total per 100 cc.; the sodium was 124 milliequiv., the chloride 90 milliequiv., and the potassium 5.2 milliequiv. per liter. The prothrombin time was 28 seconds (normal, 13 seconds) and the Coombs test was negative. An electrocardiogram showed normal sinus rhythm at a rate of 80, a PR interval of 0.14 second, a QRS interval of 0.10 second, a QT interval

of 0.36 second, axis +80, normal voltage, a sagging ST segment with inverted T waves in Leads 2, 3 and AVF, low T waves in Lead V_5 and a depressed ST segment with flat T waves in Lead V_6. A lupus-erythematosus-cell preparation was negative. The vomitus gave a + guaiac test. A chest roentgenogram revealed bilateral pulmonary congestion and fluid on the right side. The heart had increased considerably in size since the last examination, and the cardiothoracic ratio was 16.5:28 cm.

On the third day the patient appeared more ill and more icteric. The neck veins were distended up to 6 cm. at 90°. The liver border was 6 finger-breadths below the costal margin and very tender. There was a uremic odor to the breath. The urinary output was about 600 cc. daily. The blood pH was 7.47, and the carbon dioxide 24 milliequiv., the sodium 117 milliequiv., the chloride 102 milliequiv., and the potassium 4.6 milliequiv. per liter; the albumin was 2.7 gm., the globulin 2.6 gm., and the nonprotein nitrogen 150 mg. per 100 cc. A stool guaiac test was +++. A chest roentgenogram showed less marked pulmonary vascular congestion and pulmonary edema and only a small quantity of fluid present on the right. On x-ray films of the abdomen no calculi were seen. No bowel distention was present. One of 10 flasks from 5 different implantations of blood grew out *Staphylococcus albus*; all others were negative. Therapy consisted of Cedilanid, Digalin, digitoxin and Menadione.

The patient rapidly failed, with decreasing urinary output, increasing icterus (total bilirubin of 10.3 mg. per 100 cc.), complete disorientation and a soft, silent, tender abdomen. She died on the fourth hospital day.

Differential Diagnosis

Dr. Briant L. Decker*: In summary this thirty-five-year-old woman, about twenty months before admission, began to have a series of apparently minor illnesses that were probably related to the final illness. These consisted of a swelling of the hypothenar eminence with lymphangitis, pain and tenderness over the dorsum of the left hand, an episode of left-upper-quadrant pain that was thought to be perisplenitis and another episode of pain and tenderness of the right wrist. Six weeks before admission she began to have frequent recurrences of abdominal pain. One month before admission there was evidence that she had marked disease of the aortic and probably the mitral valve. Anemia had been present for at least a year, and she had had evidence of kidney disease for at least one month. Finally, after five days of increasingly severe abdominal pain and vomiting, she entered the hospital in congestive heart failure. She had severe abdominal pain and tenderness, jaundice and uremia, rapidly became worse and died on the fourth hospital day.

*Assistant physician, Massachusetts General Hospital.

I think there are some x-ray films that I should like to see.

Dr. John F. Gibbons: This first set of chest films, made when the patient had trouble with her hand a year and a half before entry, show normal lung fields and prominence of the left ventricle. The esophagus is not displaced, and there is no evidence of pulmonary congestion. Twenty months later the heart has become generally enlarged; the left border is straightened. There is diffuse engorgement of the pulmonary-vessel shadows, especially in the hilar regions, which can be seen through the heart border on the left side. There is a moderate amount of fluid in the right chest cavity. Incidentally I forgot to mention that, even several months before admission, the spleen looked as though it were enlarged and it looked somewhat larger by the time she was admitted to the hospital.

The intravenous pyelogram shows first of all that the spleen has not enlarged any more, that the liver extends down below the twelfth rib, and that there are no abnormal calculi or gas shadows in the abdomen. This film, made twenty minutes after the injection of dye, demonstrates good concentration on both sides. There is some enlargement of the renal pelvis on the right side as compared with the left, and the minor calyxes on the right side look slightly puffy, as though there was some enlargement. At thirty-five minutes there is good concentration in the kidneys but very little in the urinary bladder and lower ureter, suggesting a lag in normal renal excretion. The chest films made five days after the previous set show some clearing of the pulmonary congestion and less fluid in the right pleural cavity.

Dr. Decker: Do you think these are suggestive of pulmonary infarcts?

Dr. Gibbons: No; I do not. The only density that was in the lung field has cleared, so presumably that was fluid, and there is no residual parenchymal density.

Dr. Decker: What about pericarditis?

Dr. Gibbons: Fluoroscopic examination apparently was not performed, but the outline and shape of the heart do not suggest pericardial effusion to me.

Dr. Decker: Would you say the shape was consistent with lesions of both the mitral and the aortic valve?

Dr. Gibbons: Yes; I would.

Dr. Decker: The bones apparently were normal?

Dr. Gibbons: I saw nothing abnormal in the bones.

Dr. Decker: I was looking for one of the cardiologists for a consultation on the electrocardiogram. My question was about the QT interval of 0.36 second. Apparently, 0.35 is normal at a rate of 75; this patient's rate was 80, and she had some cardiac enlargement so that I believe that is also within normal limits. To me the electrocardiogram

suggests digitalis effect and nonspecific T-wave changes that do not necessarily indicate active rheumatic infection or coronary-artery disease.

It seems to me that the obvious cause or causes of death in this patient were congestive heart failure and uremia, the former being due to severe rheumatic heart disease. Marked abdominal symptoms and jaundice were unusual occurrences. The precipitating factor may have been one of several possibilities.

The most common cause of congestive heart failure in a person of this age with rheumatic heart disease is probably recurrent, active rheumatic fever. I believe a good case for this can be made out. She had a rheumatic heart, — Dr. Gibbons has told us that fourteen months before admission she had prominence of the left ventricle, — and seven months before admission she almost certainly had valvular heart disease because a diagnosis of subacute bacterial endocarditis was made at another hospital, and she was treated for this. She was digitalized six weeks before admission, and one month before admission she had the typical murmur and blood pressure of aortic regurgitation and the typical murmurs of mitral stenosis and regurgitation were found. The mid-diastolic rumble may have been due to an Austin-Flint murmur from aortic regurgitation and low hemoglobin but this seems unlikely because a month later marked failure of the right side of the heart had developed, with an enlarged, tender liver and edema. At this time she was again found to have the typical murmurs of aortic regurgitation and mitral stenosis and regurgitation. Because of the tender, pulsating right-upper-quadrant mass, which I take to have been the liver, I think she probably had tricuspid regurgitation, but the pulsations may have been transmitted from the aorta. In addition to the rheumatic heart disease she had symptoms before the onset of congestive heart failure that could have been due to acute rheumatic fever. She had wrist pain, painful swelling of the dorsum of the left hand and left-upper-quadrant pain diagnosed as being perisplenitis. She also had a persistent anemia and at least a terminal leukocytosis, slight fever and rapid pulse. The abdominal pain, which began six weeks before admission, became progressively worse and terminally was severe, may well have been due to peritoneal involvement by rheumatic infection. I do not believe that this pain was just the pain of a distended liver. Jaundice is unusual in congestive heart failure but may be present when the failure is complicated by severe rheumatic infection. In this case it seems unlikely that the congestion was the cause of the jaundice since the acute rheumatic fever, if present, seemed too low grade until terminally. Renal failure is unlikely in acute rheumatic fever. Renal impairment occurs, but rarely if ever to the point of failure. Also, the fever was only slight, on one reading, 100°F., the pulse was only slightly elevated, and there was no active joint involvement terminally. As I have said, the electrocardiogram was equivocal and suggests to me only digitalis effect and not acute rheumatic fever.

Did the patient have subacute bacterial endocarditis? At another hospital she was treated for it. Blood cultures, however, there and at this hospital, were negative. One did grow out *Staph. albus*, which I assume was a contaminant. It was thought that she had subacute bacterial endocarditis on the basis of the left-upper-quadrant pain, the history of a tender swelling of the left hypothenar eminence with lymphangitis and later a transient tender swelling of the dorsum of the left hand. Yet she had no more embolic phenomena, no petechiae or hematuria and no palpable spleen. Although by x-ray examination the spleen was definitely enlarged, it did not increase further in size. Subacute bacterial endocarditis should not produce this degree of renal failure.

Disseminated lupus erythematosus was considered at the time of the final admission but no lupus-erythematosus cells were found. This does not necessarily rule it out, but lack of adenopathy, leukopenia, rash, hematuria, higher fever and hyperglobulinemia also make this diagnosis unlikely.

Finally, I should like to consider polyarteritis nodosa, which I think this patient had. Polyarteritis nodosa frequently follows acute infections, including acute rheumatic fever, and as mentioned above, she may well have had a low-grade active rheumatic fever during the months before admission. I should think that the polyarteritis nodosa began about six weeks before admission, when she began to have abdominal pain. The usual duration of this disease is a matter of weeks, occasionally months. In polyarteritis nodosa the gastrointestinal system is frequently involved, resulting in recurrent, often severe, abdominal pain. I would explain the +++ stool guaiac test on this basis. The liver may also have been involved, which, with the congestive heart failure, would explain the jaundice. The pancreas is sometimes involved. It is reported by some that 80 per cent of patients with polyarteritis nodosa have renal involvement, and one author reports that this occurred in all cases studied at autopsy.[1] In the case under discussion, hematuria (usually present in polyarteritis nodosa) was not found. Also, kidney function was fairly good five weeks before admission, as shown by "good concentration of the dye" on the intravenous pyelogram. But Dr. Gibbons has helped me out a little on that; it was not as good as the protocol indicated. One week later, a ++++ test for albumin was found. A specific gravity of 1.028 was also reported. In spite of the apparently favorable findings the patient went rapidly into kidney failure and uremia. The increased reflexes and ankle clonus may have been due to the uremia.

Other possible causes of the jaundice might be considered. If it is due to pulmonary emboli, these

are extensive and the jaundice is hemolytic in type. Neither condition seems to have been present here. Congestive heart failure alone may produce slight jaundice after long-standing passive congestion resulting in cirrhosis. This does not seem to have been a factor here and would not explain the renal failure. Similarly, cholelithiasis and viral hepatitis seem unlikely.

It is my opinion that this patient died of congestive heart failure and uremia, that she had rheumatic heart disease with aortic regurgitation, mitral stenosis and regurgitation and probably tricuspid regurgitation, and that she also had polyarteritis nodosa involving the kidneys, the gastrointestinal tract, the liver and probably the heart; she may have had preceding acute rheumatic fever.

DR. WILLIAM R. OWEN: Do you think the anemia of fourteen months' duration was due to polyarteritis?

DR. DECKER: Not necessarily. She may have had acute rheumatic fever. I should like to assume that the onset of the polyarteritis was about six weeks before admission.

DR. JAMES AVERILL: I agree with Dr. Decker that the electrocardiogram probably represents digitalis effect or possibly left-ventricle hypertrophy. When the patient came into the ward, she had severe, right-upper-quadrant pain, and the diagnosis of cholecystitis was considered. It was quite evident that she was in severe cardiac failure and had a tense enlarged liver at that time. The thing that impressed me most was the rapid development of heart disease with the appearance of free aortic regurgitation over a period of about fourteen months. This sort of thing happens in rheumatic fever but usually in children; it is unusual to have such malignant rheumatic fever at this age. In this type of rheumatic fever, there may be associated arteritis, not necessarily polyarteritis nodosa. I should suspect that such a widespread vasculitis was present here. I am not aware that such rapidly progressing valvular disease can occur in lupus erythematosus; I should appreciate someone else's opinion in this regard.

DR. WALTER BAUER: I thought the patient probably had active rheumatic fever, rheumatic heart disease and subacute bacterial endocarditis. I interpreted the renal disease as representing embolic nephritis or the so-called "flea-bitten kidney" of subacute bacterial endocarditis; as has been stated, she did have congestive heart failure. We too were impressed by the point brought out by Dr. Averill — namely, that valvular disease developed in even a shorter time than the protocol indicated. We thought this clinical fact was most unusual for a case of Libman-Sacks' endocarditis (of lupus erythematosus disseminatus) or rheumatic endocarditis. We thought it was evidence of a previous, healed, subacute bacterial endocarditis. We assumed, of course without any proof, that this patient had had an active endocarditis that had been successfully treated and that she had had either a reinfection or a recurrence of the subacute endocarditis that had been cured — if I am allowed to use the word "cured" when speaking in terms of months.

DR. AVERILL: How would you explain the jaundice?

DR. BAUER: I do not think it is unheard of for a patient with congestive heart failure and acute rheumatic fever to have jaundice.

DR. DECKER: She did not have severe jaundice.

DR. BAUER: I think the bilirubin ran up to 10 mg. per 100 cc. I thought the jaundice was best interpreted in this way. We see such cases from time to time. I am sure you do at the House of the Good Samaritan, with malignant rheumatic fever, congestive heart failure and jaundice.

DR. AVERILL: Yes; however, I have not seen quite this degree of jaundice.

DR. ALFRED KRANES: Do not most of these people turn out to have pulmonary infarcts as well?

DR. BAUER: You have brought out a very good point. Keefer and Resnik[2] reported that jaundice in patients with heart disease and congestive heart failure may be caused solely by pulmonary emboli; on the other hand, I am sure it can occur without embolism.

DR. WINFIELD S. MORGAN: Do you think this patient died of uremia?

DR. BAUER: That depends on the definition of uremia. If one defines it as an elevated nonprotein nitrogen, I suppose she died in uremia. I am not exactly sure what uremia is, nor do I know what Dr. Decker means by uremia.

DR. DECKER: Kidney failure.

DR. BAUER: I think uremia is more than an elevated nonprotein nitrogen. The term is used too loosely and too frequently. Some day, someone is going to find an unknown factor that will explain why one man with an elevated nonprotein nitrogen is in coma and another is not; yet the man who is not in coma may have a nonprotein nitrogen twice as high as the one who is in coma.

DR. OWEN: We did not know how to account for this high nonprotein nitrogen; the specific gravity was 1.028 on entry, and the albumin was not enough to cause it. The patient did have oliguria and then anuria in the last twenty-four hours, and with the very high nonprotein nitrogen we signed her out as glomerulonephritis as a guess.

CLINICAL DIAGNOSES

Rheumatic heart disease, with aortic insufficiency and mitral stenosis.
Active rheumatic endocarditis.
Glomerulonephritis.

DR. BRIANT L. DECKER'S DIAGNOSES

Active rheumatic heart disease, with aortic regurgitation, mitral stenosis and regurgitation, and ? tricuspid regurgitation.
Polyarteritis nodosa of kidneys, gastrointestinal tract, liver and ? heart.

Anatomical Diagnoses

Healed subacute bacterial endocarditis, with perforation of aortic valve.
Congestive heart failure, with marked central necrosis of liver.
Jaundice.
Rheumatic endocarditis, with aortic and mitral stenosis and regurgitation.
Embolic glomerulonephritis, slight.
Old infarcts of spleen and kidney.
Infarction, terminal ileum.

Pathological Discussion

Dr. Morgan: We were not able to find evidence of polyarteritis in this case; however, there were many other findings, which I hope will explain most of the clinical picture. The peritoneal cavity contained about 250 cc. of dark, blood-tinged fluid, apparently the result of hemorrhagic infarction of some 60 cm. of the terminal ileum. This could not have been the cause of the abdominal pain that the patient had experienced in the past since it appeared to be only about twelve hours old but probably was responsible for the clinical findings in the abdomen terminally. There were old infarcts in the spleen and left kidney, giving support to the diagnosis of subacute bacterial endocarditis made seven months before admission. The lungs showed considerable chronic passive congestion.

The heart was moderately enlarged, weighing 450 gm. On the aortic valve there was a nodular, 1-cm. vegetation standing out from the edge of the anterior cusp. There was a little thickening and interadherence of the other cusps. The underlying portion of the posterior cusp was dense and fibrous, and in the midportion there was an irregular but smooth-edged perforation measuring 1.5 by 1 cm. that was obviously the result of the previous bacterial endocarditis.

Microscopical section showed the vegetation to consist chiefly of dense, hyalinized fibrin in which there were present calcium masses and tiny round bodies believed to be calcified bacteria, with little or no inflammatory-cell infiltration. In the region of the attachment of the vegetation to the valve there were several collections of large monocytes, suggesting a healing type of process, but in view of the calcification of bacteria we believe that this would be better classified as a healed bacterial endocarditis. It is the type of lesion described by Moore[3] in cases of healed bacterial endocarditis after treatment with penicillin. The mitral valve demonstrated old and active rheumatic endocarditis; it was quite thickened, its chordae tendineae were fused and densely fibrous, and it was stenosed, admitting a little more than one finger in the closed state. Along the edge of the valve leaflet were verruca-like vegetations that were consistent with rheumatic endocarditis. Sections of the myocardium did not show a diffuse rheumatic myocarditis; however, there were several lesions that we accepted as Aschoff bodies.

The liver weighed only 1250 gm. but revealed marked central congestion grossly. A half to three quarters of the liver lobules showed varying degrees of degeneration. We believed that this represented severe central necrosis and that it accounted for the jaundice, and thought that it certainly played a large part in the patient's death. The entire liver presented that picture.

The kidneys presented another problem. That is why I asked Dr. Bauer his opinion about their role in the patient's death. They weighed 350 gm. together and showed a mildly granular cortical surface. Scattered glomeruli throughout the kidneys showed focal hyalinization, but actually only relatively few glomeruli were involved, so I do not think this glomerular lesion was directly responsible for the uremia. Such lesions have been called focal embolic glomerulonephritis and in the past have been thought to result from small bits of vegetation thrown off into the circulation. However, more recently, certain authors such as Allen[4] believe that this is an immunoallergic reaction in a portion of the glomerulus with a fibrinoid type of necrosis. For that reason he prefers the term focal endocarditic glomerulonephritis. It is said to be found in about 50 to 90 per cent of cases of subacute bacterial endocarditis, depending on the authors. I favor the latter interpretation. In the case under discussion, aside from the glomerular lesions and some minor tubular changes, sections did not reveal any renal disease to account for the uremia. Perhaps the terminal oliguria and the anuria were a reflection of or in some way associated with the severe liver necrosis.

Dr. Bauer: How many blocks of the heart did you examine?

Dr. Morgan: Twelve to fourteen.

Dr. Bauer: And you only found Aschoff bodies in one or two?

Dr. Morgan: Yes.

Dr. Decker: What did the tricuspid valve look like?

Dr. Morgan: That was normal.

Dr. Bauer: You were unable to demonstrate the lesions of active subacute bacterial endocarditis?

Dr. Morgan: No such lesions were demonstrable.

Dr. Decker: What was the source of the embolus to the intestinal tract?

Dr. Morgan: The mesenteric vessels were examined, but the occlusion was not found. The most likely explanation is that a fibrinous portion of the aortic vegetation became detached and was carried to the vessel supplying the infarcted portion of ileum.

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IN SICKNESS AND IN HEALTH

Two papers published in this issue of the *Journal*, one by McCombs and Finn on "Group Health Surveys in a Diagnostic Center," and the other by Fremont-Smith on "Periodic Examination of Supposedly Well Persons," consider the modern, streamlined version of what was once called the periodic health examination from two different although not opposing angles.

McCombs and Finn, writing from the Pratt Diagnostic Clinic, have not only the pilot multiphasic screening clinic established in 1949 by the Massachusetts Department of Public Health with the sponsorship of the Massachusetts Medical Society on which to base their observations, but also a more recently organized experiment along the same lines, in which examinations were conducted on the employees, forty-five years of age and older, of a large insurance company. In both experiments patients requiring follow-up care were referred to their family physicians.

The thesis developed by these authors is that of teamwork between referring physicians and the medical center equipped for diagnostic studies and special therapy. The assumption is that such teamwork implies the acceptance only of patients referred by their own physicians, if any, and the return of the patients to the source of referral. In the case of patients who initially had no personal physician the private practice of medicine is the richer by their referral to such a practitioner.

If all patients were required to have the initial blessing of a physician, regardless of their economic status, the declared ends of medicine would be still better served thereby, in that the functions of private practice would be more widely spread, and still more sweetness would be added to flavor the relations between the profession and the public. Such a relation would not be an acceptance of the theory of the indignity of the means test, which the proponents of socialized medicine have loved to utter, but only an expression of the physician's creed that the patient must be cared for, regardless of pecuniary factors. This care may consist at times of his referral to a clinic, but the physician's obligation is clear, never voluntarily to desert a patient in need without some arrangement being made for his continuing care.

The general acceptance of the principle of the screening clinic must depend on its relative effectiveness, its practicability and its ethical status as measured by the concept of a liberal profession, with the welfare of the patient as its first concern. Whether the multiphasic screening clinic should be considered as a logical public-health activity is another matter, in which the economic factor may enter, for if an effective health service can be made available only through government intervention then such a method may have to be resorted to, if the value of the service seems to warrant it.

As a commentary on the teamwork that was developed between clinic and physician, even with

the relatively select insurance group, it is unfortunate that a number of those patients who were referred back to their family physicians for further investigation or for treatment failed to receive the continued attention indicated by the results of the screening. The number of cases of previously obscure or unsuspected disease that were found seems to indicate the value of the examination if the proper liaison is maintained.

Fremont-Smith, in his equally valuable contribution, demonstrates how a comparable grade of screening can be supplied in his office by the practitioner, however busy, who has convinced himself that where there's a will there's a way. If that will does not generally exist, then a public that desires such service can hardly be blamed for seeking it in some other place, even to the point of demanding it from tax-supported sources.

COLLEGE OF GENERAL PRACTITIONERS

General practice, as suggested a week ago in this column, has been truly returning into its own during the past decade. Fearful of its loss of prestige, in an age of specialism; conscious, perhaps of certain antiquated patterns into which it was tending to settle, it reacted to the threatening dangers and began to exert the strength inherent in it by virtue of its numbers and its indispensability. Most recently, in this country, the interests and activities of general practice have been the object of a study by the President's Commission on the Health Needs of the Nation; the second and final instalment of a report on this study appears elsewhere in this issue of the *Journal*.

The general practitioners of Great Britain, in even greater need of the mutual security that can come through organization, have been nevertheless more tardy in getting at it. In Britain practically everything is expected of the general practitioner, and far too little is granted him in return in the way of either emolument or prestige. The victim of a lingering caste system within the profession, he is only now, after bearing for nearly five years the brunt of the inequities of the National Health Service, demanding a recognition of the dignity that befits his indisputable place in the scheme of medicine.

This increasing concern on the part of general practitioners over "the extent to which they were being deprived of the opportunity to maintain those high traditions which throughout the ages have distinguished the family doctor" resulted a year ago in the establishment of a "General Practice Steering Committee" to investigate "the possible foundation of an academic body with broad educational aims, to be the headquarters of general practitioners in Great Britain, and to help and encourage them to maintain a high standard." The report of the Committee has been published in a special supplement to the January, 1953, issue of *The Practitioner*.

In England as in this country the actual sphere of influence and the specific qualifications of the general practitioner are difficult to define with exactness; the Steering Committee has settled for a preparation on the part of the doctor "to assume some degree of responsibility in any and every illness, in people of all ages, over long periods of time; he must play his part in preventive medicine; and he must help in many social difficulties. His deliberate aim should be to achieve breadth of vision rather than great depth in any particular sphere."

The Committee has accordingly recommended and has in fact gone about the establishment of the "College of General Practitioners." This organization is to be academic and educational rather than political; it is to provide leadership and determine policies, assist in the training of undergraduates and promote the postgraduate teaching of general practitioners, stimulate research by general practitioners and "record and foster the traditions and ideals of general practice."

Younger than the American Academy of General Practice but with hoarier traditions on which to draw, the College, its character determined by British usages, will be to British medicine much that the Academy is to the medicine of America. May it grow as strong and prosper as mightily!

NEW POST HOLE

When, in August of last year, the editors of the *Journal* cautiously made space for a modest monthly packet from England under the title "By the London Post," they had hopes that the experiment might

develop into just the series of brief and informative news essays that have been appearing these past six months. For Dr. Lister has produced not simply accounts of clinical progress and reports of the various meetings that are held in a great medical metropolis, but stories of people, places and customs such as might appear in a modern medical Spectator. Nor is his feeling for atmosphere confined to his description in today's *Journal* of "A London Fog."

Because of this special interest, as indicated by the titles that have appeared — "Conference Time"; "'Doctor' or 'Mister'"; "An English Country Practice"; "An American in London" — it is proposed to promote "By the London Post" to a special place in Medical Intelligence, where "A London Fog" and its accompanying sketches appear today. It is hoped that the pen of Dr. Lister will continue to be the fountainhead of many more articles of equal interest.

DEATH TAKES A HALF HOLIDAY

THE health of the American people operated at peak load in 1952, according to Dr. Louis I. Dublin, second vice-president and statistician of the Metropolitan Life Insurance Company, with continuing good prospects for 1953.

For the fifth year in succession the death rate, which was 9.6 per 1000 population in 1952, has been below 10; the 1952 rate, indeed, considering the number of older persons in the population, is probably the lowest in history.

The mortality from tuberculosis continues its rapid decline, with every present indication that its rate for 1952 was less than 18 per 100,000, which is half what it was in 1946 and a third of the rate for 1938. The infant mortality rate was scarcely over 28, and the maternal rate less than 0.7 per 1000 live births. This represents an improvement of nearly 400 per cent in ten years.

Poliomyelitis had its highest prevalence in history, with more than 57,000 cases, but the case fatality was low and the death rate only 2 per 100,000 population. Temporary immunization with gamma globulin holds promise of improved control of the disease in future epidemics.

Mortality from the degenerative diseases of middle life and later is relatively unchanged, despite the rising proportion of older persons in the population and the prolonged hot weather. The death rate from accidents was about the same in 1952 as in 1951, although the total number of lives lost was in the neighborhood of 95,000, or approximately 1000 more than in the earlier year, according to another release from Metropolitan Information Service. Only slight comfort can be derived from the fact that the death from motor-vehicle accidents is approximately the same for the two years, despite an increase in the number of cars on the road.

The soothing thought remains that although death eventually comes to all persons as well as archbishops, an increasing number are given the opportunity of first enjoying life a little longer.

The high price of drugs in California may have suggested the idea to some physicians, of becoming homoeopathic practitioners.

Boston M. & S. J. *February 2, 1853*

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

NEW REPORT FORM FOR VENEREAL DISEASES

On or about February 1, 1953, the Department will introduce a new morbidity form for reporting cases of venereal diseases. The revised form brings up to date the present-day nomenclature for these diseases and uses the latest terminology for the separate stages of syphilis.

The asymptomatic stage of syphilis becomes the latent stage, and it is subdivided into the early and late latent stages. Early latent syphilis has been defined as the presence of a symptomless infection characterized by a repeatedly positive standard blood test for syphilis, with negative spinal-fluid serologic findings and with a history of a primary lesion within four years, or in the absence of history of initial lesion when the patient is less than thirty years of age.

Late latent syphilis, on the other hand, is defined as the presence of a symptomless infection characterized by a repeatedly positive standard blood test for syphilis with negative spinal-fluid serologic findings and with a history of a primary lesion for four years or more, or in the absence of history of

initial lesion, when the patient is thirty years of age or more.

In the revised form, tertiary syphilis will be reported as late syphilis. Late syphilis is further subdivided into the following types: mucocutaneous, osseous, cardiovascular, visceral and central nervous system.

The terminology for the other stages of syphilis remains the same — that is, primary, secondary, and congenital.

The format of this form has been changed to make it easier for the physician to complete the required information, and on the reverse side, ample space is provided for the doctor to report the contacts of his patients, or patients who fail to return to him and who have a positive blood test or who have prematurely discontinued treatment.

Prominently displayed on this form is the word "Confidential," reminding the physician that information concerning the venereal diseases is not for public records and must be kept confidential according to Chapter 111, Section 119, of the *General Laws*.

NONCLINICAL NOTES

Dr. Vernon W. Lippard, a native of Marlborough, Massachusetts, assumed his duties as dean of the Yale University School of Medicine early this year.

Dr. Lippard, who received his medical degree from Yale University in 1929, has served as assistant dean and associate dean at the College of Physicians and Surgeons of Columbia University, and as dean of medicine at Louisiana State University and the University of Virginia. During World War II he served with the United States Army Medical Corps in the Pacific area with the rank of colonel.

NOTICES

NEW ENGLAND CARDIOVASCULAR SOCIETY

A meeting of the New England Cardiovascular Society will be presented by the Beth Israel Hospital and the New England Center Hospital at the Dorothy Quincy Suite, John Hancock Hall, 180 Berkeley Street, Boston, on Monday, February 9, at 8 p.m. (*please note change of date*).

PROGRAM

Beth Israel Hospital (Herrman L. Blumgart, M.D., presiding):

Left Bundle-Branch Block Masquerading as Right Bundle-Branch Block. Louis Wolff, M.D., and J. Richman, M.D.

Studies on the Pathogenesis of Intravascular Thrombosis. Stanford Wessler, M.D.

External Electric Stimulation of the Heart. Paul M. Zoll, M.D., Leona R. Norman, M.D., and Arthur L. Linenthal, M.D.

New England Center Hospital (Samuel Proger, M.D., presiding):

Fibrinolysis and the Clotting Mechanism in Normal and Pathologic Conditions. Mario Stefanini, M.D.

The Electrocardiogram in Potassium Depletion: Its relation to serum concentration and potassium balance. William B. Schwartz, M.D., Harold D. Levine, M.D., and Arnold S. Relman, M.D.

A Method for Gradual Occlusion of the Internal Carotid Artery in the Treatment of Aneurysm. Bertram Selverstone, M.D., and James C. White, M.D.

Free parking privileges are available on St. James Avenue above Clarendon Street (no attendant on duty). Emergency telephone numbers are Decatur 8-9081 and Decatur 8-9296.

Interested physicians, medical students and members of the New England Postgraduate Assembly are cordially invited to attend.

COMBINED ANESTHESIA TEACHING CONFERENCES OF BOSTON

Programs for the Combined Anesthesia Teaching Conferences during February and March are as follows:

February 6. Meeting with New England Society of Anesthesiologists at St. Francis Hospital, Hartford, Connecticut.

February 13 (Chairman, Philip S. Marcus, M.D.). Circulatory Problems During Anesthesia.

February 20 (Chairman, Leo V. Hand, M.D.). Fluid and Electrolyte Balance.

February 27 (Chairman, Benjamin Etsten, M.D.). Effects of Anesthesia upon the Hepatic and Renal Systems.

March 6. Meeting with Massachusetts Society of Anesthesiologists in the Joslin Auditorium, New England Deaconess Hospital, Boston.

March 13 (Chairman, Julia G. Arrowood, M.D.). Relaxation for Surgical Anesthesia.

March 20 (Chairman, Bert B. Hershenson, M.D.). Anesthesia for Obstetric Procedures.

March 27 (Chairman, Philip S. Marcus, M.D.). Geriatric Problems in Anesthesia.

These meetings, with the exception of February 6, are held in the auditorium of the Evans Memorial of the Massachusetts Memorial Hospitals, 750 Harrison Avenue, Boston, on Friday evenings, from 7 to 9 o'clock, except when they are in conjunction with the anesthesia societies.

All physicians are invited to attend.

NEW YORK SOCIETY FOR CIRCULATORY DISEASES

The seventh regular meeting of the New York Society for Circulatory Diseases will be held in Room 440 of the New York Academy of Medicine building, 2 East 103 Street, New York City on Tuesday, February 10 at 8:30 p.m. Dr. Simon Dack will preside. The entire meeting will be devoted to a critical evaluation of the newer concepts of the pathogenesis and treatment of congestive heart failure. Among the speakers will be Dr. Raymond E. Weston, head of the Cardiovascular and Metabolic Research Service of the Montefiore Hospital, New York City, and his research associate, Dr. Jacob Grossman. Programs may be obtained from the Secretary, Gabriel F. Greco, M.D., 114-08 Linden Blvd., Ozone Park 16, New York.

SOCIETY MEETINGS AND CONFERENCES

JANUARY 30. First Public Health Workshop on Dental Care in Industry. Page 41, issue of January 1.

JANUARY 30 AND FEBRUARY 20. New England Center Hospital House Officers' Association. Page 124, issue of January 15.

FEBRUARY 2–28. Springfield Hospital Educational Program. Page 164, issue of January 22.

FEBRUARY 2–APRIL 20. Hartford Medical Society. Page 42, issue of January 1.

FEBRUARY 3. Tufts Medical Alumni Lecture. Page 124, issue of January 15.

FEBRUARY 4–APRIL 8. Postgraduate Medical Institute. Boston. Page 452, issue of September 18.

FEBRUARY 6. New England Society of Anesthesiologists. Page 827, issue of November 20.

FEBRUARY 6. American College of Radiology. Page 1001, issue of December 18.

FEBRUARY 6–MARCH 27. Combined Anesthesia Teaching Conferences of Boston. Notice above.

FEBRUARY 7. Treatment of Coronary-Artery Disease: Present Status of Anticoagulants and Early Ambulation. Drs. Paul D. White and Samuel A. Levine. Mount Auburn Hospital, Cambridge.

FEBRUARY 9. New England Cardiovascular Society. Notice above.

FEBRUARY 9–MARCH 23. Postgraduate Course in General Medicine. Cushing Veterans Administration Hospital, Framingham. Page 697, issue of October 30.

(*Notices concluded on page ix*)